

DIV. OF FISHES

COMMERCIAL FISHERIES REVIEW

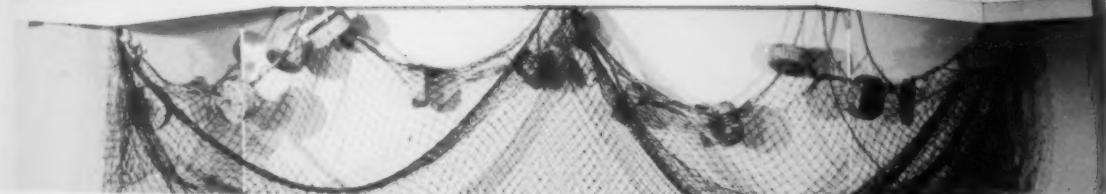
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VOL. 24, NO. 5

MAY 1962

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
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COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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S/31/63

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FISH PROTEIN CONCENTRATE--A HIGH QUALITY ANIMAL PROTEIN^{1/}

By E. R. Pariser*

Fish protein concentrate or fish flour--a new high-quality animal protein product--is potentially of economic significance to our fishing industry, political significance to our Nation, and sociological significance to the world. The domestic fishing industry should be given the opportunity to produce a satisfactory low-cost fish protein concentrate meeting general nutritional standards for worldwide use in human diets. Aiding the fishing industry to obtain the know-how and technical knowledge needed to produce this new product is the goal of the research on fish protein concentrate at the College Park Technological Laboratory of the U. S. Bureau of Commercial Fisheries.

Let us examine some of the factors that make this new product so important. Let us also examine what has been done and what is still needed in order to realize the goal of the Bureau's research on fish protein concentrate.

NEED AND VALUE

Hunger is the biggest problem of the century. More than half of the world's total population suffers from lack of food, adequate in quality and quantity to sustain health, growth, and physical vigor. Progress to relieve this condition has largely been offset by the alarming and accelerating rate of population growth. By the year 2000, the population of Asia, Africa, and Latin America will increase by about three billion people--an addition equal to the total world population of today. The task we face is staggering.

Malnutrition, undernutrition, is largely the result of an inadequate consumption of high-quality animal protein which is needed to complete and to balance the diets of peoples of developing nations, diets containing preponderantly vegetables and cereals. Sadly enough, young growing children and expectant mothers suffer most from a lack of proteins containing sufficient quantities and correct proportions of the required amino acids. Milk, eggs, beef, chicken, and the usual fishery products all contain high-quality animal protein, but those products are not universally available or they cost too much.



Fig. 1 - Extractor of UNICEF-ISESA experimental fish protein concentrate or fish flour plant in Quintero, Chile.

^{1/}Adapted from an address by Dr. G. M. Knobl, Jr., Assistant Laboratory Director, Technological Laboratory, U. S. Bureau of Commercial Fisheries, College Park, Md.

* Research Chemist, Technological Laboratory, Division of Industrial Research, U. S. Bureau of Commercial Fisheries, College Park, Md.

Other sources of proteins of high quality must therefore be found--and fast. The fishery resources of the sea are an important source. Wisely managed, the sea with its great population of fish represents a vast reservoir of animal protein, proteins of exceptionally high quality that can be supplied in the form of concentrated fish protein.

The above concepts are by no means new, yet today, fish represents only a minor percentage of the food consumed by human beings. This is the more surprising in view of the fact that more than 70 percent of the surface of this planet is covered by oceans and seas and that, furthermore, the sea is considered by many authorities to be, acre for acre, about as productive as arable land.

Systematic efforts to farm the seas on a rational, industrial scale with a view of producing concentrated protein for human consumption have lagged far behind similar efforts to harvest and utilize the fruits of the land. The time has now come, however, when we can no longer leave this opportunity unchallenged, when old ideas have to be translated into action, and when the pursuit of the production of concentrated fish protein has become an obligation to mankind.

Aside from the purely humanitarian issues, the production of a satisfactory fish protein concentrate would provide much-needed economic stimulation for our domestic fishing industry.

Such production would provide the all-important diversification needed by the industrial fisheries segment of our fishing industry--eliminating such market conditions of imbalanced supply and demand as was experienced a short time ago in the fish-reduction industry. The fishing industries of other nations of course would eventually produce fish protein concentrate as well. If 2 years ago Peru had diverted only 100,000 tons of their fish meal production into fish flour to feed their own people, we would never have witnessed--as we did--the collapse of the world market for fish meal.



Fig. 2 - Dehydrated protein concentrate elevators used in UNICEF-ISESA experimental plant in Quintero, Chile.

dock--a protein waste that could feed thousands. In many areas, periods of glut lower the price of the catch, and often no market is available. If however the processors were able to manufacture fish protein concentrates during times of surplus, markets would stabilize and a low-cost protein food for the hungry would be available.

From a biological standpoint, the manufacture of fish protein concentrate would help us realize our goal by achieving efficient utilization of resources compatible with sustained optimum yield. Our fishermen would also be able to reestablish a favorable balance on our fishing grounds between the predatory fish and the grazing types of fish. Many years of selective fishing for the larger species has favored growth of smaller, less desirable kinds of fish until, in many areas, the latter are now relatively overabundant.

POTENTIAL MARKET AND POLITICAL SIGNIFICANCE

A fair market might exist for fish protein concentrate even in the United States--for instance as a supplement to breakfast cereals and baby foods. Cookies, doughnuts, noodles, and similar foods could almost magically be transformed into sources of good-quality protein if properly supplemented with fish protein concentrate--resulting in less parental worry over the starch-consuming teen-ager. From another point of view, our industrial fisheries

alone could supply in one fishing season more than the protein needed by our entire population during a 2-week period of a nuclear emergency.

It was estimated at the recent FAO Conference on Fish in Nutrition that 600 million people receive the major share of global animal protein, whereas 2 billion people, mostly in developing countries, lack this important nutrient. Clearly, 2 billion people represent an immense market--and one ready today.

Obviously, 2 billion people cannot continue to be denied animal protein without the possibility of dire, explosive, and politically obvious consequences²⁷. The other side of the coin is just as obvious. If adequately fed, these people may turn toward the goal of economic stability that we all seek as a basis for enduring world peace.

RESEARCH ON FISH PROTEIN CONCENTRATE

Although many attempts have been made to develop methods to manufacture fish protein concentrate, none of these efforts have yet met with complete success. Either these methods are still beset with processing problems or they have not been approved in good conscience by nutritionists, pediatricians, FAO, and the like.

Also, with few exceptions, the United States is not conducting, as other nations are, the scientific experimental studies designed to achieve a satisfactory product. For these reasons, Congress appropriated \$50,000 for fiscal year 1962 to the Bureau of Commercial Fisheries for a research project designed to study existing methods, and if necessary, to improve these or to develop new concepts for the manufacture of fish protein concentrates suitable for worldwide incorporation into human diets.



Fig. 3 - Bagged fish protein concentrate in experimental plant at Quintero, Chile.

BUREAU PROGRAM: Our objectives are designed to specify ultimately methods that:

- (1) Require low initial capitalization.
- (2) Are economical in operation.
- (3) Are flexible for both large-scale and small-scale operation.
- (4) Are flexible enough to permit operation in those parts of the world where public utilities are limited.
- (5) Result in the production of an end product that will be acceptable to peoples who may have varying taste preferences, cultures, and taboos.
- (6) Result in the production of an end-product that will be approved as being fully satisfactory and suitable by world-recognized experts in the field of protein supplementation.
- (7) Result in the production of a product that could be cheaply shipped to distant parts and that could be stored for varying periods of time without quality loss, and that could be easily incorporated into the local diets of undernourished peoples.

The project is supported, not only by some members of the United States Congress, and the fishing industry, but is also endorsed and assisted by United Nations Agencies, such as ²⁷Venter turpissima pars corporis (Sallust)--the stomach is the wickedest part of the body.

the Food and Agriculture Organization, the United Nations International Children's Emergency Fund, and the World Health Organization. It is being conducted with the support and approval of the Food for Peace and of the Freedom from Hunger campaigns and operates in co-operation with the Interdepartmental Committee on Nutrition for National Defense and the National Academy of Sciences Food and Nutrition Board.

The over-all Bureau program, set up for this extended research project, consists of the following three phases:

1 - Comprehensive Survey: To ensure that the funds allocated by Congress to this project will be used in the most effective manner, the Bureau is conducting a general survey of methods, used or studied, for the manufacture of fish protein concentrates for human consumption. Part of this survey, which is still under way, has been completed. Labor, time, and funds spent upon this preliminary work are insignificant compared to the labor, time, and funds that would be required to establish, by independent experiments, the knowledge that will, in this way, be gathered from different sources. On completion of this general survey, a detailed monograph will be prepared for the United States industry. This monograph will constitute a record of scientific data concerning the partial successes and failures of the different attempts to develop a satisfactory manufacturing process.

2 - Formation of an Expert Consultant Group: As the second phase of the program, the Bureau plans to request assembly of a panel of expert consultants who will be presented with the findings in the monograph. The panel members will be asked to examine critically the facts contained in the report in order to be able to assist in the further programming and planning of the Bureau project. Experts from a wide field of scientific disciplines would be asked to participate in this consultant group, the formation of which is considered to be an essential condition for the success of this highly complex project. It is envisaged that the group will meet at least once a year, after the initial assembly, to advise us on our research program. The urgency, magnitude, and significance--both domestic and international--of our aims are ample justifications for calling upon the foremost scientific and technical authorities that this country has to offer. It is, furthermore, realized that before any method can finally be considered as being fully successful and satisfactory, it has to be conscientiously approved by an inter-disciplinary body of scientists such as the Protein Advisory Group of the United Nations. Some of the members of the latter organization will participate in the work of our panel and in this way help to assure the global approval of our work. Failure to work in close cooperation with such a group has proved to be a great handicap in previous trials carried out by private industry.

The survey and, it is hoped, the initial formation of the consultant group is expected to be accomplished in 1962.

3 - Laboratory Development of a Satisfactory Process: With the assistance and advice of the panel of experts just mentioned, the final phase of the research program will be designed either to attempt to improve existing methods, or if indicated, to develop, on a laboratory scale, a new process or processes that when satisfactory will be turned over to the fishing industry for further pilot-plant and commercial development.

Accomplishments: As already indicated, the first part of the general survey has now been completed. During this initial phase, plants in this country, Canada, Central and South America were studied. Although details of these studies will be published in a monograph, let us examine two groups of facts learned--in Canada and in South America--that will indicate the value of this survey approach to our research.

Canada: Scientists at the Technological Station of the Canadian Fisheries Research Board in Halifax have been working for some time now on the problem of fish protein manufacture. At the moment, the Station's research program is directed towards the production of the best fish protein concentrate that can be manufactured, irrespective of cost. Only cod fillets are being used. The Canadian scientists hope to produce a product that might be introduced on the United States market, both for use as a protein fortifier in various food prod-

ucts and in an attempt to compete on the casein and egg albumen markets. We should note that the Canadians believe in a United States market--and they are preparing for it. The careful and scientific manner in which the fish flour program is conducted at Halifax is highly impressive. They are actively striving to produce a product of uniform quality.

South America: Characteristic of the independent and energetic efforts that are being made to develop manufacturing methods is a process developed by Dr. Bertullo, a staff member of the University of Montevideo, Uruguay. During a survey of micro-organisms associated with marine life, Dr. Bertullo isolated a new strain of yeast from a local species of fish. He discovered furthermore that this yeast had proteolytic activity; that is, that it was capable of breaking down proteins into amino acids. Inoculation with this yeast of a mass of comminuted fish, to which a small amount of molasses had been added, leads, within about 72 hours, to the production of a liquid mass. Bones, scales, and so on have disappeared during this process and so has the characteristic fishy odor and taste of the raw material, which is rich in Vitamin B₁₂. The product appears, on the basis of present experience, to have a remarkably long shelf life. It is believed that this type of product may become increasingly important, not only because it lends itself, by a process of spray-drying, to the production of a cheap dehydrated protein (or amino acid) flour, but also because it has, so far, shown itself to be of excellent nutritive value.

CONCLUSION

The successful, large-scale extraction of proteins from the seas for use in the human diet is today the goal of engineers and scientists in many countries--including Soviet Russia. Once successfully developed, the resulting product would constitute the beginning of an entirely new segment of the fishing industry. It will develop as explosively as the growth of the world population. It will rank foremost in importance with but a few other industries, capable of producing a cheap, high-quality food, available to everyone, everywhere. A most vigorous effort should be made for the United States to be in the vanguard on this potential advance in human nutrition.



SEAWEED CHEMICAL DERIVATIVE AS SUBSTITUTE FOR BLOOD PLASMA

Researchers for years have been looking for a plentiful substance which can be substituted for whole blood or blood plasma in the giving of emergency transfusions to disaster or accident victims. A new discovery is a chemical derived from the tiny cells of giant brown seaweed.

This whole blood substitute was reported by two Japanese surgeons of the Kyushu University Medical School in Fukuoka, Japan. Up to this time an accident victim who lost a great deal of blood and received no transfusion went into shock, which could prove fatal. Hasty transfusions of whole blood or blood plasma usually prevents the rapid drop in blood pressure which produces this shock. In emergencies, injection of salt water or sugared water have been used for this purpose. The newly discovered mixture comprising water plus the seaweed chemical is said to be superior to salt water or sugared water for transfusions to prevent shock, as it does not break down in the blood stream. (Canadian Fisherman, February 1960.)

RAT-FEEDING STUDIES TO DETERMINE PRESENCE OF ANTIMETABOLITES, WATER-SOLUBLE VITAMINS, AND ESSENTIAL MINERALS IN RAW MENHADEN AS COMPARED WITH RAW HADDOCK AND BEEF

By Caroline H. Kurtzman*, Robert R. Kifer**, and Donald G. Snyder***

ABSTRACT

A rat-feeding study was conducted to determine the possible presence of antimetabolites other than thiaminase in raw menhaden and to evaluate the contribution of the water-soluble vitamins and minerals in menhaden in meeting an animal's requirements for growth. For comparison, these factors were evaluated in raw haddock fillets, which do not contain thiaminase, and in raw beef round. It was found that the raw menhaden contained no antimetabolites affecting growth, other than thiaminase, and contributed considerably toward meeting an animal's requirements for essential minerals and for the water-soluble vitamins other than thiamine. Haddock fillets contained no antimetabolites, contributed a lower level of vitamins for growth than did menhaden, but apparently contained a higher level or a better balance of essential minerals. Beef round probably contained no antimetabolite, contributed about the same level of vitamins for growth as did menhaden, but apparently contained a lower level or poorer balance of essential minerals than did either menhaden or haddock.

INTRODUCTION

It is known that certain raw fishery products contain the enzyme thiaminase, which destroys thiamine (Lee 1948; Yudkin, 1949). This fact is important to fur farmers, who feed large quantities of raw fish to their fox and mink. Special precautions must be taken to avoid the effects of this antimetabolite when thiaminase-containing fish are included in the diet, or a thiamine deficiency disease, commonly called Chastek paralysis, may develop. Fur farmers often alternate the feeding of fish containing thiaminase with fish lacking thiaminase or with other protein food. Thiaminase can be destroyed by cooking the fish, since enzymes are heat labile. Nevertheless, many fur farmers prefer to feed the fish raw.

Although a regimen of alternate daily feeding of thiaminase-containing fish with other high-quality protein foods is apparently successful, many farmers and other nutritionists surmise that these fish may contain additional antiwater-soluble-vitamin factors. If this speculation were found to be true, further precautions during feeding would be necessary.

Also, although it is known that thiaminase-containing whole raw fish will contribute no thiamine to the diet, little is known regarding the possible contributions of these fish in meeting an animal's requirements of other water-soluble vitamins and of necessary minerals. Such information would aid in



Fig. 1 - Staff member holding black-hooded rat shows equipment used in the antimetabolite study.

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the efficient and economical formulation of animal diets with both thiaminase and nonthiaminase-containing fish.

Raw, whole menhaden, which contains thiaminase, represents a food source of great potential value to the fur farmer. This industrial species of fish is quite abundant and should be available to the fur farmer at a low cost compared to other fish and land-animal meat. Menhaden apparently, in limited trials, has been successfully fed to mink under controlled conditions (Anonymous 1960).

The object of the study reported here, therefore, was to conduct animal-feeding studies to determine the possible presence of other antimetabolites in menhaden and to evaluate the contribution of this species in meeting animal requirements for water-soluble vitamins and nutritionally-important minerals. Rats were utilized in the study because of unavailability of mink at this laboratory. The fillets of raw haddock and raw round of beef, fish and land-animal meat supposedly containing no antimetabolites, were included for testing and represent extremes of food sources to serve as comparisons and controls against the menhaden.

EXPERIMENTAL PROCEDURE

Groups of weaned rats of a highly inbred, black-hooded strain were fed the various diets summarized in table 1. The rats had free access to water. The high-energy supplement and the meat or fish were placed in separate feeding cups for free-choice selection.

Table 1 - Formulations of the Diets Fed the Various Groups of Rats

Diet Designation	Dietary Components					
	High Energy, Formulation ^{1/}	Whole Menhaden ^{2/}	Haddock Fillets ^{2/}	Beef Round ^{2/}	Thiamine Supplementation Only ^{3/}	Complete Water-Soluble Vitamin Supplementation ^{4/}
1	X	X	-	-	-	-
2	X	X	-	-	X	-
3	X	X	-	-	-	X
4	X	-	X	-	-	-
5	X	-	X	-	X	-
6	X	-	X	-	-	X
7	X	-	-	X	-	-
8	X	-	-	X	X	-
9	X	-	-	X	-	X

^{1/}Consists of sucrose, lard, cod-liver oil (in the proportions of 80, 16, and 4 parts by weight, respectively) and 0.02 grams vitamin E per 2,000 grams of diet--as a source of carbohydrate, fat, and fat-soluble vitamins.

^{2/}Raw and carefully ground to avoid altering any enzymes--as a source of protein, water-soluble vitamins, minerals, and energy.

^{3/}Oral daily supplementation of approximately 10 times the daily requirement fed with tuberculin syringe (0.2 milliliters of a thiamine hydrochloride solution of 10 milliliters thiamine HCl in 100 milliliters of water per 50 grams body weight).

^{4/}Oral supplementation of thiamine as above plus approximately two and one-half times daily requirement of each of the water-soluble vitamins fed in the drinking water.

Menhaden were obtained in excellent condition from a boat that had been at sea off the coast of North Carolina two days. The menhaden was frozen immediately after the boat was docked. At the laboratory, the frozen fish were ground in a Hobart meat grinder and placed in plastic bags for storage. Haddock fillets and beef round were purchased at a local supermarket. The packaged haddock fillets were prefrozen and were not ground for feeding purposes. The fillets were stored in the original containers. The beef round was carefully trimmed of excess fat, ground with a Hobart grinder, and then frozen. All of these foodstuffs were held at 0° F. until shortly before the daily feedings.

Thiamine, when fed, was administered orally (table 1) to each rat rather than placed in the drinking water. (Data obtained from initial studies indicate that thiamine held in the drinking water is destroyed.)

Four rats, two males and two females, weighing 50 to 56 grams, were randomly allotted to each group. Not more than one litter-mate was allotted to any single group. The rats were housed individually in cages fitted on wire screens. The temperature of the room was maintained at 80° ± 2° F., and the humidity was maintained at 65 ± 5 percent. Daily records were kept of weights during the 4-week study, and observations were recorded of any noticeable physiological changes in the animals.

SUMMARY OF RESULTS AND DISCUSSION

The data are presented in figure 2.

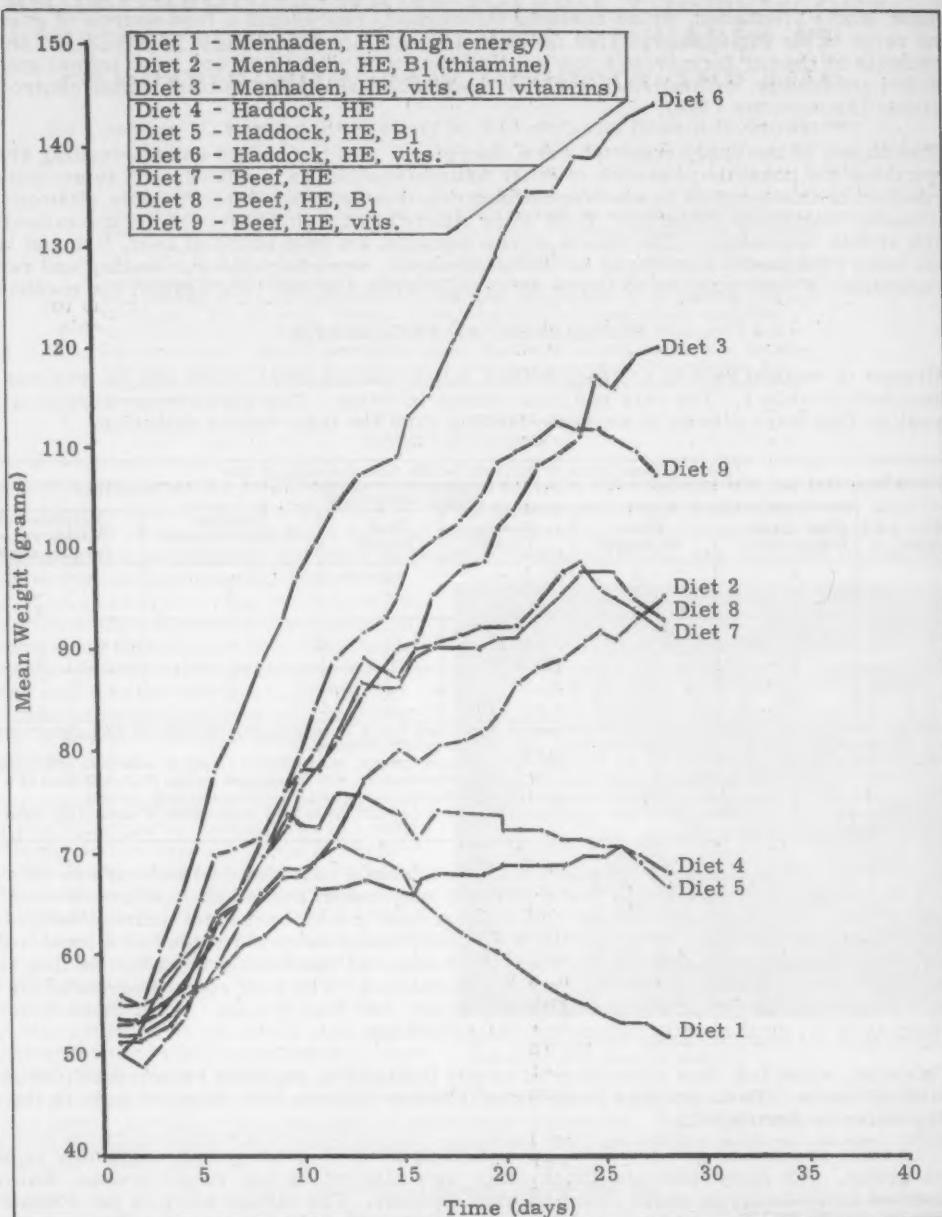


Fig. 2 - Gain in weight of groups of rats fed diets containing high-energy supplementation and fish or meat with and without vitamin supplementation.

MENHADEN DIET: The group of rats fed the diet containing menhaden and no vitamin supplementation (diet 1) began to lose weight on the 12th day and continued to lose weight thereafter. Characteristic symptoms of avitaminosis were noted during the testing period. These symptoms included loss of appetite during the second week, followed by loss of weight and loss of muscular coordination, capillary fragility, and sensitivity to touch during the third and fourth weeks of the study. By the fourth week, a marked difference in weight and physiological condition was noted for these rats compared to those receiving the same diet but with thiamine supplementation (diet 2) and with complete water-soluble vitamin supplementation (diet 3). Rats gained weight slowly when fed menhaden with thiamine supplementation (diet 2) but did not exhibit the deficiency symptoms observed with the rats of group 1. Rats fed menhaden and all the vitamins (diet 3) gained considerably more weight than did the rats fed diets 1 and 2. The mean gain of the rats fed diet 3 was about 80 percent of that normally obtained when rats of this colony are fed diets well balanced in nutrients.

These results indicate that raw whole menhaden (1) is thiamine deficient, as was expected, since menhaden contains thiaminase; (2) does not contain other antimetabolites detrimental to growth of rats; (3) contains sufficient levels of water-soluble vitamins (other than thiamine) to permit growth; and (4) contains sufficient levels of essential minerals to permit good growth. Results also indicate that thiaminase is the primary limiting factor for growth of rats under the feeding conditions described.

HADDOCK DIET: Rats fed the diet containing haddock (diet 4) gained well during the first week. Periods of loss of weight were observed during the second week. The rats lost weight slowly during the last 2 weeks and more noticeably during the last few days of the study. When fed the same diet with thiamine supplementation (diet 5), rats gained weight slowly until the last 2 days when they lost weight. When all the vitamins were added to the diet (diet 6), the rats gained considerable weight--nearly the optimum expected with rats of this colony. This gain was markedly greater than that obtained when the rats were fed the diet containing haddock with no vitamins (diet 4) or haddock with thiamine supplementation (diet 5).

These results indicate that raw haddock fillets (1) do not contain thiaminase or any other antimetabolite detrimental to growth, (2) contain a level of water-soluble vitamins barely adequate to maintain weight, and (3) contain levels of essential minerals to permit nearly optimum growth. Results also indicate that one or more water-soluble vitamins is the limiting factor for the support of growth of rats under the feeding conditions described. It was observed that some edema and tenderness developed in the rats during the last week of the study. The reason for this condition is not clear. The edema did not seem to be sufficiently acute to account for much of the gain in weight of the animals.

BEEF DIET: Rats fed diets containing beef with no vitamins and with thiamine supplementation (diets 7 and 8) gained fairly well until about the 13th day and then gained slowly until the last week of the study. These groups lost weight noticeably during the last 4 days of the study. The final weight of these rats was greater than the weight of the rats fed the menhaden with no vitamins (diet 1), and the rats gained weight somewhat better than did those fed diets 4 and 5. Even so, they lost weight during the last 5 days of the study, as did the rats fed diets 4 and 5. The final weight of the rats fed beef and a complete vitamin supplementation (diet 9) was not as great as rats fed either menhaden or haddock with a complete vitamin supplementation (diets 3 and 6), although the levels and ratios of high-energy supplement and meat or fish consumed by the rats fed these diets were similar. Before the loss of weight, the growth of the group fed diet 9 was about equal to that of the group fed diet 3 but considerably less than that of the group fed diet 6.

These results indicate that raw beef round (1) probably does not contain thiaminase or any other antimetabolite detrimental to growth and (2) contains a level of water-soluble vitamins sufficient to permit fair growth for a limited time. The results also indicate that one or more of the water-soluble vitamins is primarily a limiting factor for support of growth and that there may be an additional limiting factor for growth of rats, not definable by this

study, that is present in beef and is not present in fish. Quite possibly, this additional limiting factor for growth in beef may be that the minerals necessary for growth are not present in adequate amounts in beef and are present in adequate amounts in fish.

EFFECT ON HAIR COLOR: It was observed near the end of the study that the normally dark brown portion of the hair of the rats fed diets 4, 5, 6, 7, 8, and 9 turned silvery grey. The reason for this change in hair color is not apparent.

CONCLUSIONS

Results indicate that raw whole menhaden contains no antimetabolites^{1/} other than thiaminase and that they contribute considerably toward meeting an animal's requirements for minerals and for the water-soluble vitamins other than thiamine. Raw haddock fillets contain no antimetabolites, contribute a lower level of vitamins for growth than does menhaden, but apparently a higher level of essential minerals. Raw beef round probably contains no antimetabolites, contributes about the same level of vitamins for growth as menhaden, but apparently a lower level of essential minerals than either menhaden or haddock.

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^{1/}For the purposes of this report, antimetabolites include only antiwater-soluble-vitamin factors.



HERRING ROE INDUSTRY GETS START IN NORWAY

Herring roe, specially salted, is a new export product of Norway. In Japan, known as "Kazanoko," it is an expensive delicacy eaten in big quantities during the New Year celebrations. Last year was the first time a shipment of 220 pounds was sent to Japan. This year, between 20 and 30 fish plants in Norway are making "Kazanoko."

"Kazanoko" is an old tradition in Japan. Among other things, it is supposed to increase fertility. The name, "Kazanoko" translated directly means "more sons and daughters."

The salted roe is eaten without any special preparation. It is eaten especially with rice wine. Since Japan lost most of her herring production territory, she has turned to Norway for this special delicacy. But the 1961 herring failure in Norway means that there won't be much herring roe this year.

The herring roe which is mostly used is "Moree Coast Eel, glass-rogn." It is an over-ripe herring roe, soft like jelly, which used to be thrown away. The roe is salted for three days to make it hard and solid. After three days, it is washed and then salted again. Then it is also frozen. (*The Fisherman*, April 14, 1961.)

TRENDS AND DEVELOPMENTS

Fishing Vessels and Gear Developments

EQUIPMENT NOTE NO. 12--A NEW SCALLOP TRAWL FOR NORTH CAROLINA:

North Carolina fishermen recently developed a small lightweight trawl as an effec-

tive gear for calico scallop fishing. Advantages of the new trawlare: (1) It is more effective than a Georges Bank dredge on the hard sand bottoms of the North Carolina beds; (2) it is easily handled; (3) its initial and replacement costs are low; and (4) existing ves-

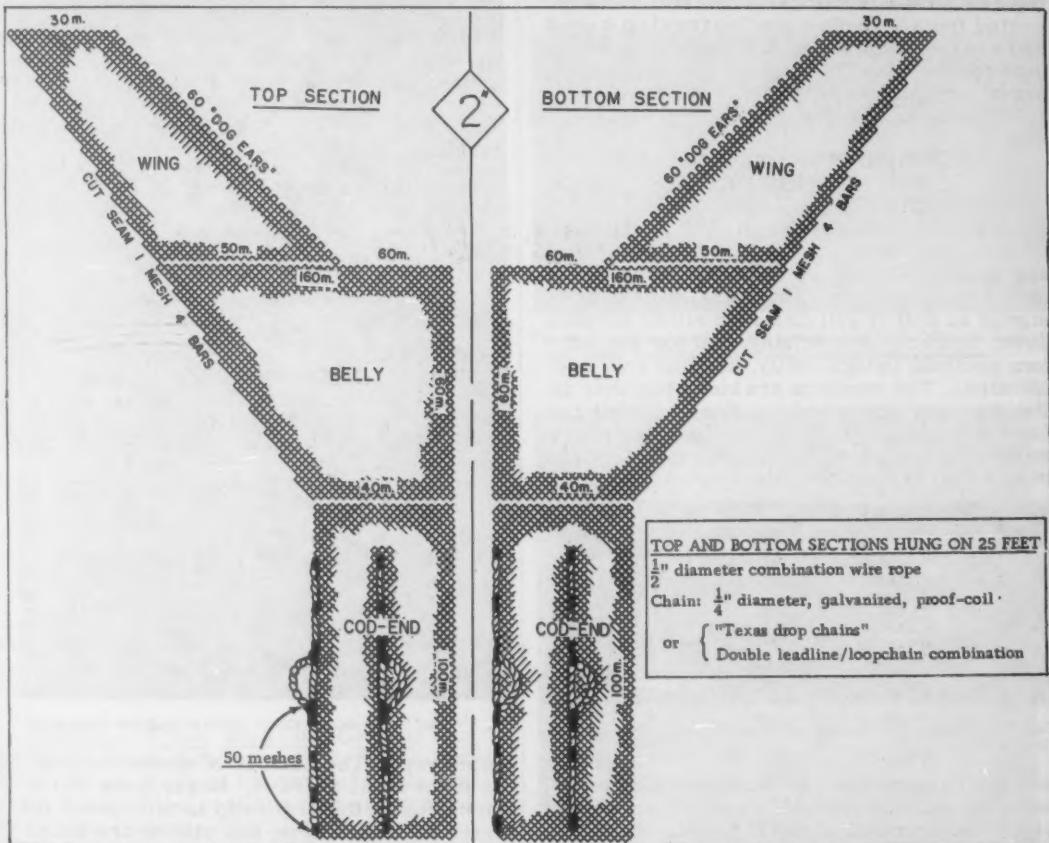


Fig. 1 - Cutting diagram for a 25-foot North Carolina calico scallop trawl.

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SEP. NO. 649

sels can be converted from other trawl or dredge fisheries to scallop trawling, quickly and cheaply. The disadvantage that the new trawl requires more maintenance and repair time than do other types of scallop gear is outweighed by the advantages. Most captains fishing North Carolina scallop beds are using trawls modeled after the new design.

A unique feature of the new trawl is that top and bottom sections are identical. When the original bottom sections become weakened, the trawl is simply turned over. Top and bottom trawl lines are switched, chafing gear and beackets are changed, and the original, relatively unworn top sections become the new bottom sections. The catch to be expected from a 25-foot scallop trawl on a good bed ranges from 400 to 500 bushels of whole scallops per day (24 hours). Double-rigged boats, dragging twin trawls, have caught 1,000 bushels in a day.

TRAWL SPECIFICATIONS AND CONSTRUCTION DETAILS

The new scallop trawl (fig. 1) is built of 2- to 4-inch (stretched mesh) cotton webbing and is hung on 25 to 28 feet of $\frac{1}{2}$ -inch combination hanging rope. Since the trawl is designed so that it will fish with either surface down, there is no overhang, and top and bottom sections (wings, belly, and cod end) are identical. The sections are laced together in the manner described by Knake (1956) to form a 2-seam net. Belly sections are short so that the amount of webbing exposed to wear is as small as possible. Heavy beackets (fig. 2)



Fig. 2 - Beackets. Four beackets are seized the complete length of the cod end.

are used around the top section of the cod end, instead of the usual bag rings, to provide greater strength to the trawl. Manila or nylon rope is laced through the beackets to serve as a splitting strap.

TRAWL ACCESSORIES

Chafing Gear: Polyethylene rope yarns or automobile inner tube strips are used as chaf-

ing gear. For additional protection, a false belly of heavy webbing is often laced over the bottom belly of the trawl.

Texas Drop Chains, Tickler Chains, and Double Leadlines: The Texas drop chain (fig. 3) is used to increase the scraping and digging action of the trawl. It consists of a length of chain cut one foot shorter than the length of the leadline and fastened to the leadline at regular intervals by 2-, 4-, or 6-link

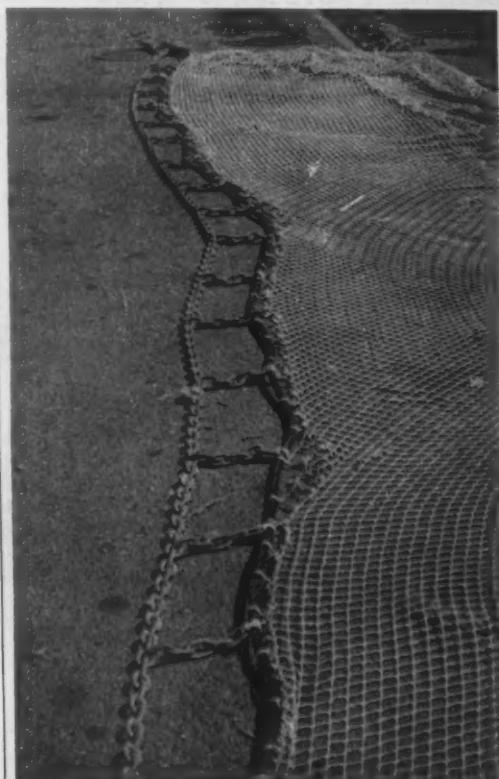


Fig. 3 - The Texas drop chain--a popular leadline attachment.

chain drops. The number of drops used varies from trawl to trawl. Regardless of the number used, the first drop is attached at the center of the leadline, and others are added successively, on either side, until final bights are formed at the ends of the chain. The chain will stretch with use and decrease the efficiency of the trawl unless the drops are examined and adjusted frequently. Adjustments are made to the end bights (fig. 4).

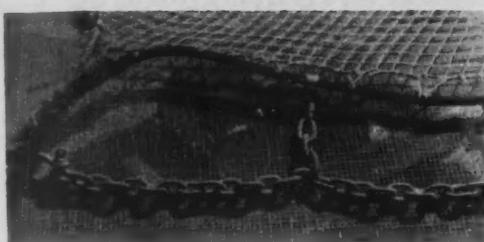


Fig. 4 - Adjustments to maintain the fishing efficiency of trawls equipped with Texas drop chains are made in the last bights of the chain.

Other devices used, singly or in combination, to increase the scraping action of the trawl and scare up the scallops in front of the trawl include tickler chains and double leadlines (fig. 5). One to three tickler chains are often used. These are stretched

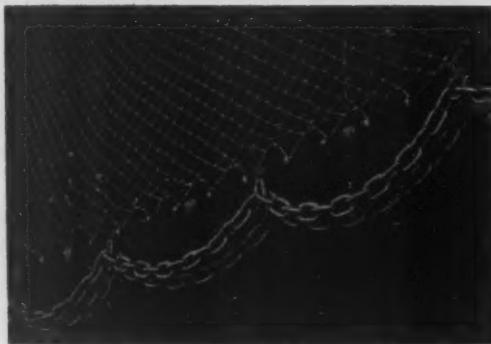


Fig. 5 - The double leadline. A device used to increase the weight of the forward bottom portion of the trawl and to increase its digging and scraping action.

across the mouth of the trawl from points of attachment near the trailing bottom corner of each door. Doubling the leadline, and attaching a loop chain, serves to increase the weight of the leading edge of the trawl and may serve to make the trawl tend bottom more effectively.

Leglines, Trawl Boards (Doors) and Bridles: Most fishermen feel that a trawl that fishes close to the trawl boards will catch many of the scallops that are scared up by the boards. Short leglines between net and boards are favored for this reason.

The size, weight, and type of boards used with the scallop trawl depend on the size and power of the vessel used and the personal preferences of the user. Bracket boards

measuring 3 by $5\frac{1}{2}$ feet and weighing 250 pounds are used most commonly.

The complete rig (boards, trawl, and accessories) is fished from a single warp that is connected to the boards by a 10-fathom bridle of $\frac{1}{2}$ -inch wire rope.

TRAWL OPERATION AND PERFORMANCE

The trawl is set and dragged in the usual manner. Most of the North Carolina vessels drag from outrigger booms in the familiar shrimp-boat fashion (figs. 6 and 7). Owing to its light weight and small size the trawl is easily handled. At the end of a drag, the splitting



Fig. 6 - Double-rigged scallop trawlers tied to the dock in Beaufort, North Carolina, after having unloaded their catches.



Fig. 7 - A single-rigged scallop trawler on the grounds. The trawl is dragged from the starboard outrigger boom.

strap is brought to the rail of the boat and hooked to the hoisting tackle. The cod end is brought aboard, and the catch is dumped on deck. The trawl is then reset. Any scallops that might be in the webbing above the splitting-strap beackets are left in the net until the end of the next drag--or are allowed to spill back into the water. The time that would be consumed in making a second lift of the net to shake the scallops down into the cod end, and bring them aboard, is used more profitably in making an additional drag. By limiting drags to 15 minutes, the catches usually fit well within the cod end, and little loss is experienced.

In a series of trial drags lasting 36 hours, a 25-foot scallop trawl and an 8-foot George's Bank dredge were fished side by side on the hard sand bottom of the Core Bank calico scallop bed. Local crews handled both pieces of equipment. The trawl consistently out-fished the dredge--sometimes by as much as 6 to 1. Apparently many of the scallops congregate in depressions in the otherwise smooth bottom. The rigid dredges, unable to dig into the hard sand, seem to slide over the tops of these depressions;^{1/} whereas the more flexible trawls follow the bottom, dip down into the depression, and obtain the greater catch.

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1/Similar trials on the Cape Canaveral, Fla., beds indicate that on softer bottoms the dredges generally outfish the trawls.

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California



PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 62-1-Pelagic Fish: The inshore area from the United States-Mexican Border to the northern end of Monterey Bay was surveyed from the air (January 16-18, 1962) by the California Department of Fish and Game's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools. Weather

conditions were generally good throughout the area.

Pelagic fish schools were not abundant, but medium anchovy school groups were found off Port Hueneme, in the northern portion of Santa Monica Bay. Only one small sardine school (Santa Monica Bay) was observed during the flight.



Pair of gray whales traveling together. One just sinking with much white water due to speed, and other blowing, with blow-holes open.

Southbound gray whales (76 in all) were noted throughout the survey area.

Two large groups of basking sharks were observed, one composed of approximately 55 individuals was very close to shore in Morro Bay and the other, composed of about 45 actively feeding individuals, was about one-half mile north of La Jolla Point. While these sharks are to be expected in Central California, their occurrence as far south as La Jolla is unusual.

Note: See Commercial Fisheries Review, March 1962 pp. 11-12.

* * * * *

ROCKFISH TAGGING STUDIES CONTINUED:

M/V "N. B. Scofield" Cruise 62-S-1-Rockfish: The California Department of Fish and Game research vessel N. B. Scofield cruised (Jan. 23-Feb. 7, 1962) in the inshore area from Pt. Conception to Pt. Montara and the Farallon Islands to capture blue rockfish (Sebastodes mystinus) by hook and line for tagging, food studies, age, and other life history information.

The cruise was shortened by stormy weather; excellent weather prevailed during the remaining 13 days. A total of 1,738 blue rockfish was caught, of which 1,336 were

tagged, 74 were preserved for special studies on freezing shrinkage and for meristic counts, and 57 were preserved for stomach analysis. Of the tagged fish, 14 were delivered to aquaria at Monterey and Santa Cruz for observation. All tagged fish were deflated and 68 required stomach replacement; all were anesthetized in a special solution.

Note: See Commercial Fisheries Review, March 1962 p. 12.

* * * * *

CENTRAL VALLEY KING SALMON SPAWNING RUN IS DOWN:

King salmon spawning stock which used California's Central Valley streams in 1961 numbered 256,000 fish, the California Department of Fish and Game reported on March 17, 1962. This was one of the smallest runs on record and about half the size of the excellent 1960 run when 482,000 kings spawned in the same area which has an estimated spawning capacity of 500,000 fish.

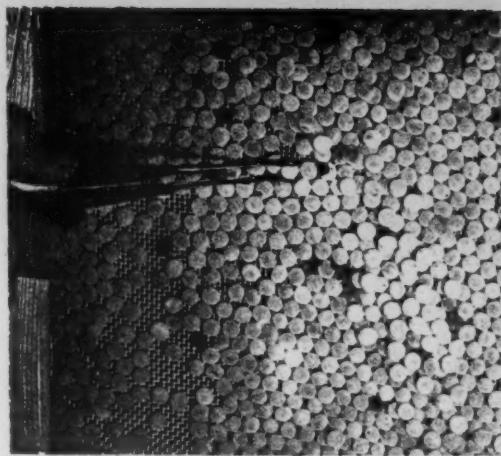
While wide annual variations in spawning runs such as this are not unusual, marine resources biologists uncovered no comprehensive reason for this decrease while making their 1961 salmon spawning survey.

"A drop like this one does not necessarily endanger future salmon fishing," declared the marine resources chief. "But we do feel it is a matter of concern. Although similar low years have occurred off and on in the past without vitally affecting the salmon fishery, the possibility of two low years in a row could bring a considerable drop in the salmon stock based on those spawning years."

The annual salmon spawning stock survey covers an area which extends from Redding south into the San Joaquin Valley, and most of the State's salmon are produced in that area. It includes aerial counts of individual spawning beds and concentrations of spawning fish. Ground observers keep a careful count of spawned-out salmon carcasses, destroying those counted to avoid duplication.

Once again the main Sacramento River accommodated a majority of all salmon spawners in the Central Valley. However, only one stream in the Sacramento Valley registered an increase. Mill Creek had 2,000 fish where 1,000 spawned in 1960.

The Nimbus Hatchery on the American River recorded an all-time high egg take



Picking dead salmon (white) eggs from tray.

from salmon, although the number of spawning salmon in the American River itself was below that of last year.

San Joaquin Valley streams registered several record-low spawning stocks, including the Mokelumne, Consumnes, Merced, Tuolumne, Stanislaus, and main San Joaquin rivers. There was virtually no spawning run in those rivers, with the exception of the Tuolumne and Stanislaus.



Central Pacific Fisheries Investigations

SIZE AND SEX DISTRIBUTION OF TUNA BEING STUDIED:

One of the persistent features in the size distribution of tuna taken by long-line gear is the predominance of males among the larger fish. This has been especially noticeable for yellowfin and big-eyed tuna. The hypothesis formulated was that the disproportionate sex ratio in large fish was the result of differential growth between sexes. This difference, if it exists, would be important in population studies for determining maximum yield. To test the hypothesis and to examine the sex composition of the catch, a sampling program was initiated in April 1960 to obtain size and sex data on yellowfin and big-eyed tuna from the Hawaiian long-line catch. The program is being conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu.



A long-line vessel (sampan) of the Honolulu fleet.

Although sampling has not extended sufficiently in time to determine growth rates with great precision, the big-eyed data collected over the first 12 months of sampling (April 1960 through March 1961) were analyzed to test the hypothesis. The results show a difference in growth rate with sex, the males growing at a faster rate than the females.

The analyses included fitting normal curves to the monthly weight frequencies by the probability paper method. From the multimodal distribution the mean and standard deviation of 4 or 5 modal groups were calculated for each month. Evidence that these modal groups represented year-classes is their progression in time, which is such that the mean size of a modal group is approximated by the succeeding modal group one year later.

To estimate the ages of the year-classes and to mathematically describe the growth of big-eyed, a composite figure was constructed assuming similar growth rates among the year-classes. To estimate the age at initial recruitment, April was selected as the month of peak spawning. Several females with large ovaries were observed in the catch during early spring of 1961. By extrapolating the progression of modal sizes and assuming a rapid early growth, the 45-pound fish entering the long-line fishery as recruits in October were estimated to be 18 months old. It is possible that the rate of growth of the small fish may be overestimated.

The collection of size and sex data will be continued to confirm these preliminary findings and to follow several year-classes through the fishery. In addition, the gathering of data on small big-eyed which are occasionally captured by surface fishing meth-

ods will be intensified. Finally, a check will be maintained on the gonad condition of big-eyed to confirm the postulated spawning peak in April.

* * * * *

SENSORY SYSTEMS OF SKIPJACK TUNA BEING STUDIED:

The sensory systems of skipjack tuna are being studied by the staff of the behavior program at the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu. In order to provide basic information for future studies on the sense of smell, the structure of the skipjack olfactory organ has been examined and described.

The external openings of the olfactory system, the nares, fit into the general streamlining of the skipjack. The anterior naris is a very small circular opening, only 0.01 inch in diameter on a 20-pound fish, and is directed forward. The posterior naris is an elongated vertical slit 0.7 inches behind the anterior naris. This slit is directed posteriorly, with a thin flap of skin overlapping it anteriorly. Both of these nares open into the olfactory capsule. The actual sensing structure, the olfactory rosette, is located directly inside the anterior naris, and consists of 40 radially-oriented leaves. A longitudinal passage between two mounds of connective tissue leads to the posterior naris. Below this passage an accessory sac extends posteriorly along the jaw. This sac is compressed by the movement of the jaw while the mouth is being closed and is expanded when the mouth is opened, theoretically acting as a bellows-type pump.

Experiments were conducted to find out how water moved through the capsule and to see if the postulated pump was functional. Heads of fresh fish were placed in a current of water flowing at 3, 10, or 15 feet a second. These currents corresponded to slow, average, and fast swimming speeds observed in feeding skipjack at sea. (The speeds were calculated in the Laboratory from underwater movies taken of skipjack from the stern viewing chamber of the Bureau's research vessel, the Charles H. Gilbert.) Dye was introduced into the current to determine how the water entered the olfactory capsule. In a current of 10 feet per second the same amount of water entered the capsule whether the mouth was opened and closed or held



Stern viewing chamber of the Bureau's research vessel, the Charles H. Gilbert.

stationary. Yet, in still water more entered when the jaws were worked. Additional experiments demonstrated that the posterior naris acted as a one-way excurrent valve in flowing water, but allowed some water to enter in the absence of a current. In standing water, with the capsule filled with dye, little spurts of dye were ejected from the posterior naris when the jaws were closing, whereas almost no dye was ejected from the anterior naris.

We conclude that a continuous stream of water flows very slowly through the olfactory capsule of a swimming skipjack, and that an additional increment of water is drawn in via the anterior naris when the mouth is opened and is ejected via the posterior naris when the mouth is closed.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-FEBRUARY 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, substantially less fresh and frozen fishery products were purchased in February 1962 than in the same month of 1961 by the Defense Subsistence Supply Centers. The decline was 37.5 percent in quantity and 13.8 percent in value. Compared with the previous month, February 1962 purchases were down 37.8 percent in quantity and 20.3 percent in value.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, February 1962 with Comparisons

		QUANTITY		VALUE	
		February	Jan.-Feb.	February	Jan.-Feb.
1962	1961	1962	1961	1962	1961
		(1,000 Lbs.)		(\$1,000)	
1,089	1,743	2,840	3,599	794	921
				1,790	1,846

During the first two months of 1962, purchases were also down 21.1 percent in quantity and 3.0 percent in value as compared with the same period in 1961. Because of higher prices for most types of frozen fishery products and purchases of higher-priced products, the value of the purchases did not drop as steeply as the quantity.

Prices paid for fresh and frozen fishery products by the Department of Defense in February 1962 averaged 72.9 cents a pound, about 16.0 cents less than paid in the previous month and 20.1 cents less than paid in February 1961.

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, February 1962 with Comparisons

Product	QUANTITY		VALUE	
	February	Jan.-Feb.	February	Jan.-Feb.
	1962	1961	1962	1961
			(\$1,000)	
Tuna	· · · · (1,000 Lbs.) · · · ·	-	-	161
	363	3,113	1,365	1,739
Salmon	-	-	-	603
Sardine	4	15	7	2
			6	4
			17	

Canned: A small amount of canned sardines was the principal canned fishery product purchased for the use of the Armed Forces in February this year. For the first two months of this year purchases of canned fish were up substantially as compared with the same period of 1961 because of a large purchase of canned tuna in January.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.



Florida

FISHERIES RESEARCH, JULY-DECEMBER 1961:

Research with funds provided by various sources, including the Florida State Board of Conservation and the U. S. Fish and Wildlife Service is being carried on by the Marine Laboratory of the University of Miami. The research of interest to commercial fisheries which was reported in the Laboratory's

September 1961 and December 1961 Salt Water Fisheries Newsletter follows:

Larval Shrimp: The spawning grounds of the famed Tortugas pink shrimp are under observation by Marine Laboratory scientists. The shrimp spawn mainly during the summer months in water from 50 to 150 feet in depth, but 1961 was a poor spawning year. Young larvae collected in plankton nets for study were only about one-fortieth as abundant as in 1960.

Reasons for the spawning "failure" are being looked for in changes in the oceanographic climate of the area this year. In 1961 temperatures of the bottom layer of water were 5°-10° F. cooler than in 1960. Also, strong currents were present in the area which could carry larvae from the spawning grounds into the Straits of Florida, where they would be swept away from the shallow inshore nursery areas in which they grow for some months before migrating to the offshore spawning grounds.

Poor shrimp catches in many parts of the Gulf and South Atlantic regions in 1961 caused severe economic hardship in the fishing industry. These larval shrimp studies, sponsored by the U. S. Fish and Wildlife Service, are part of a concerted attempt by many government and university scientists to discover the reasons behind fluctuations in the catches of commercial shrimp.

Spawning seasons and grounds of the Tortugas pink shrimp continued to be mapped in the last quarter of 1961. Few shrimp larvae were found during the summer and fall of 1961 compared to previous years. In July and August 1961, pink shrimp larvae were only about one-fortieth as abundant in the center of the spawning grounds as in the corresponding months of 1960. Unusually cold water temperatures occurred close to the bottom where the adult shrimp live. Bottom water temperatures in the area of heavy spawning in 1960 were colder in 1961. Whether the lower temperatures caused the reduction in the numbers of larvae remains to be proven.

The scientists are making a careful check to determine whether this light spawning will affect the success of the fishery in 1962.

Ecology of Florida Bay: The hot, dry weather of the summer months of 1961 caused

a severe reduction in the run-off into Everglades National Park. With this reduction of fresh-water, salinity increased rapidly both in Florida Bay and in the inner bay areas where the water is normally brackish. This increase in salinity has made it possible for marine fishes to invade the inner waters.

In addition to the increased catches of sport fish, in the third quarter of 1961 there were large numbers of young menhaden and anchovies in Coot Bay and eastern White-water Bay, where they had been absent for most of the previous four years because salinity values were very low. These are especially valuable as food for larger fishes.

The increased salt content of the inner bays has made it possible for marine algae to re-colonize these areas to such an extent that the bottom is becoming stabilized once more, allowing the water to become clear.

Pink shrimp catches from June-August 1961 were lower than those reported in the same period of 1960, but they were reasonably high. Unfortunately for the hungry fish, pink shrimp in the last quarter of 1961 were scarce in inshore waters.

Spotted Sea Trout: Over 180 sea trout tags were returned from the Pine Island area during the third quarter of 1961. A total of 1,529 tags (28 percent) had been returned by the third quarter.

The fish were tagged in January 1961 to determine the abundance and mortality rates of this fish population. Catch information returned with the tags supports earlier findings which indicated that this sea trout population is sedentary. The tags were collected monthly by a Marine Laboratory biologist during trips to obtain monthly landing reports from fish dealers.

Tags from spotted sea trout continued to be recovered in the last quarter of 1961 from the tagging experiments carried out as long ago as three years, but in reduced numbers. Over 30 percent recoveries have been made since the large-scale tagging experiment was carried out during January 1961 at Fort Myers.

Fish Behavior Studies: A scientist visiting from Japan in the third quarter of 1961 ended his project on the structure and function of the eyes of pelagic fishes and re-

turned to Japan. His investigations indicated that in open-sea fish, as in shallow-water species, it is possible to predict the feeding habits and habitat of a fish from a careful examination of its sense organs, including the eyes.

For example, surface swimmers such as the sailfish see most clearly those objects which are straight ahead of them, while fish that swim considerably beneath the surface but feed on fish swimming at the surface see most easily objects slightly above them.

Experiments on the effects of light on the behavior of the pink shrimp (*Penaeus duorarum*) and white shrimp (*P. setiferus*) were continued in the third quarter of 1961. Various wave lengths and intensities of light were used and the resultant behavior evaluated. Preliminary evidence indicates that the use of lights to capture shrimp may well be possible. More work is required before this method can be recommended with certainty, but the findings thus far indicate that it is possible certain wave lengths of light may attract these shrimp at certain times of day more effectively than the odor of fresh food fish.

Data is being accumulated on the ability of sharks to detect and respond to low-frequency sound. Much more work is needed on this project before meaningful and useful results can be expected, but in general it can be said that the sense of hearing in sharks is keener than had been anticipated.

Plans are in progress to build a facility for studying the behavior of marine animals at the Marine Laboratory. The building will be equipped with apparatus for controlling those aspects of the environment which seem most important. In this manner, ecologists will be able to study the effect of temperature, for example, on the settling rates of marine organisms.

The importance of such a facility to behavior studies lies in the fact that laboratory animals do not often exhibit the behavior patterns that are seen in nature. With it animals can be maintained under natural conditions, as measured in the field. These conditions can then be changed, and the effects of the change on behavior observed.

An interesting project on one aspect of communication between fishes was in the

last quarter of 1961. Neon gobies "make their living" by removing parasites from the bodies and mouth cavities of larger fishes. Since they are "bite-size" and good to eat, why are they not, in fact, eaten by these large fishes? In a study of the interaction between groupers and neon gobies it was found that the gobies, in effect, ask permission to enter the mouth of the grouper by touching them on the flank. If, however, a grouper solicits the visit by holding very still near the goby, with its mouth open, the goby can enter with impunity without asking. In studying these relationships, facts and techniques are being learned which will be of use in studying the behavior of the larger, more difficult to keep, game and commercial fishes.

Note: See *Commercial Fisheries Review*, Dec. 1961 p. 28.

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OYSTER BOTTOM LEASES DOUBLED SINCE END OF 1960:

Oyster bottom leases in Florida have doubled since the close of the 1960 calendar year, the Director of the Florida State Board of Conservation announced on March 20, 1962. He said that as of December 31, 1960, there were 58 oyster leases with a total of 1,954.77 acres active. From January 1 through December 31, 1961, 33 leases were granted for a total of 1,298.80 acres. Beginning on January 1 to and including March 13, 1962, 21 leases were granted for 918.87 acres. As of March 1962, there were active 112 oyster leases for a total of 4,172.44 acres.

The Gulf coast of the State had shown the most activity and interest in the development of leased bottoms. The oyster production for the 1961/62 season would be the highest in the State's history. The marketing of Florida oysters has been maintained at a steady level this season and shipments to out-of-state destinations were running high as of March.



Frozen Fish

MICROWAVE THAWING STUDY STARTED:

Preliminary tests of thawing frozen fishery products have been started at the Gloucester Technological Laboratory of the U. S. Bureau of Commercial Fisheries. A 13½-pound block of whiting was thawed after 2 minutes

of exposure to microwave energy, this compares to about 2 hours in circulating water. The level of microwave energy to which the product was exposed was regulated so that it received the maximum energy until the internal temperature of the block reached 27 degrees F. Then to prevent cooking, the energy was reduced to about one-tenth of the initial value. The cost of such a commercial unit would be about \$50,000.

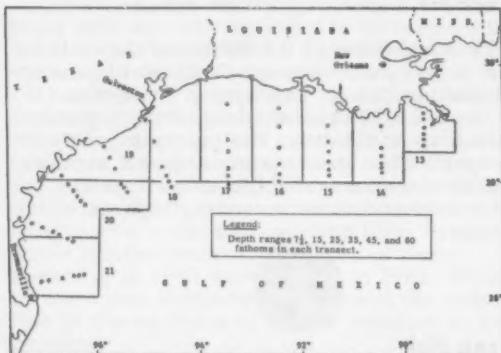
Note: See Commercial Fisheries Review, March 1962 p. 17.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-18 and "Miss Angela" Cruise MA-12: Good catches of 12-15 count heads-on brown shrimp were made in the 20-40 fathom range off Port Isabel and in the 40-60 fathom range off Terrebone Bay by the M/V Belle of Texas and the M/V Miss Angela between March 20 and 28, 1962. A good catch of 21-25 count brown shrimp was also made off Terrebone Bay in the 20-40 fathom range. In the same depth range (20-40 fathoms), a good catch of 15-20 count brown shrimp was made off Morgan City. Both research vessels are operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico.



Shows the station pattern for Cruise BT-18 of the M/V Belle of Texas and Cruise MA-12 of the M/V Miss Angela, March 20-28, 1962.

A total of 9 statistical areas were covered. In each area one 3-hour tow was made in each of 3 depth ranges. A 45-foot shrimp trawl was used. Most of the catches were

brown shrimp, but there were some small catches of white shrimp. The largest catch was 54 pounds of 12-15 count heads-on shrimp in area 21 in 20-40 fathoms. The next largest catch was 48 pounds of 12-15 count shrimp in 40-60 fathoms in area 14, followed by a catch of 42 pounds of 15-20 count shrimp in 20-40 fathoms in area 15.

Note: See Commercial Fisheries Review, April 1962 p. 15.



Industrial Products

FISH MEAL, SOLUBLES, AND OIL:

United States Major Indicators, February 1962: For the first month of 1962,



Outside view of a Reedsville, Va., menhaden industrial products plant.

Major Indicators for U.S. Fish Meal, Solubles, and Oil, February 1962

Item and Period	1962	1961	1960	1959	1958
.....(Short Tons).....					
<u>Fish Meal Production and Imports:</u>					
Production 2/:					
April	1/	6,179	5,076	6,810	5,143
March	1/	2,751	2,955	2,122	2,601
February	2,700	2,071	1,923	2,128	1,842
January	2,732	2,713	2,433	3,095	2,075
Jan.-Dec. 3/	1/	289,039	257,969	275,396	226,299
Jan.-Dec. final tot.	1/	290,137	306,551	248,140	
Imports:					
April	1/	19,080	10,397	17,854	11,758
March	1/	20,458	18,652	16,719	7,233
February	1/	14,344	8,081	19,463	11,219
January	25,427	9,531	8,571	19,700	7,696
Jan.-Dec. totals .	1/	217,845	131,561	132,955	100,352

(Table continued on following page)

Major Indicators for U.S. Fish Meal, Solubles, and Oil, February 1962 (Contd.)					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
<u>Fish Solubles Production and Imports:</u>					
<u>Production 4/:</u>					
April	1/	2,539	2,870	6,987	3,619
March	1/	2,295	2,462	2,382	1,371
February	1,800	1,502	1,812	2,211	1,133
January	1,637	1,129	1,697	1,913	1,385
Jan.-Dec. totals .	1/	109,780	98,929	165,359	130,177
<u>Imports:</u>					
April	1/	220	134	1,622	45
March	1/	135	87	410	84
February	1/	155	1,875	398	149
January	273	219	214	954	473
Jan.-Dec. totals .	1/	6,739	3,174	26,630	14,567
..... (1,000 Gallons)					
<u>Fish Oil Production and Exports:</u>					
<u>Production:</u>					
April	1/	439	248	436	200
March	1/	63	66	42	84
February	47	44	51	38	49
January	93	55	46	64	46
Jan.-Dec. 3/ 5/ .	1/	33,471	26,690	24,418	21,957
Jan.-Dec. totals .	1/	1/	27,886	24,978	22,028
<u>Exports:</u>					
April	1/	980	761	1,116	254
March	1/	753	421	600	1,664
February	1/	2,327	3,177	999	1,038
January	679	1,793	276	898	825
Jan.-Dec. totals .	1/	16,331	19,155	19,264	12,539

1/Not available.

2/Does not include crab, shrimp, and miscellaneous meals.

3/Preliminary data computed from monthly data.

4/Includes homogenized fish.

5/Represents over 95 percent of the total production.

Note: Data for 1962 and 1961 are preliminary.

United States production and imports of fish meal and solubles were up as compared to the same month in 1961. While production of fish oil was also up, exports were down substantially. February 1962 production of fish meal, oil, and solubles was greater than in the same month of 1961.

* * * * *

U. S. Production, February 1962: Preliminary data on U. S. production of fish meal,

U. S. Production 1/ of Fish Meal, Oil, and Solubles, February 1962 (Preliminary) with Comparisons				
Region	Meal Short Tons	Oil 1,000 Gallons	Solubles (Short Tons) ..	Homog- enized
February 1962:				
East & Gulf Coasts .	575	11	43	3/90
West Coast 2/	2,156	35	1,608	-
Total	2,731	46	1,651	90
Jan.-Feb. 1962 Total	5,402	120	3,220	110
Jan.-Feb. 1961 Total	4,263	98	2,486	145

1/Does not include crab meal, shrimp meal, and liver oils.

2/Includes Hawaii, American Samoa, and Puerto Rico.

3/Includes condensed fish.

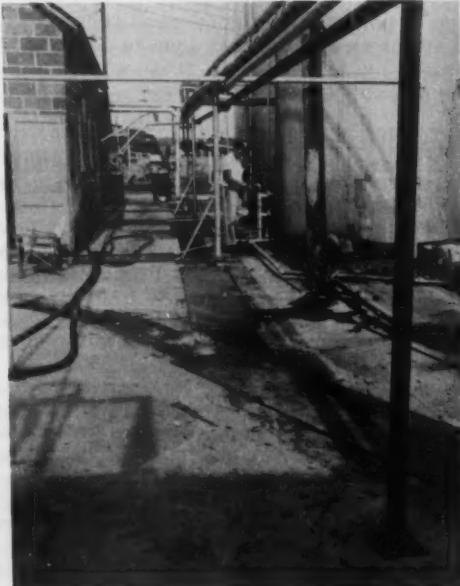
oil, and solubles for February 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

* * * *

U. S. Production, January 1962: In January 1962, 2,700 tons of fish meal and scrap and 92,900 gallons of marine animal oils were produced in the United States. Compared with January 1961, this was a slight decrease (less than 1 percent) in meal and scrap production, but an increase of 37,800 gallons (69 percent) in oil.

In January 1962, tuna and mackerel accounted for 1,600 tons or 60 percent of the meal total, and 37,800 gallons or 41 percent of the oil production. Pacific sardines contributed 455 tons (17 percent) to the production of meal and 14,000 gallons (15 percent) to the production of oil.

A total of 1,600 tons of fish solubles was produced in January 1962--180 tons more than in January 1961. The produc-



A portion of a menhaden industrial products plant in Reedsdale, Va.

U.S. Production of Fish Meal, Oil, and Solubles, January 1962/			
Product	January		Total
	1962	1961	1961
Fish Meal and Scrap:			
Alewife	-	-	89
Herring:			
Alaska	-	-	3,810
Maine	-	-	1,239
Menhaden ^{2/}	-	-	246,590
Sardine, Pacific	455	-	2,744
Tuna and mackerel	1,641	1,567	21,432
Unclassified	636	1,171	12,735
Total	2,732	2,738	289,039
Shellfish and marine animal meal and scrap	3/	3/	10,000
Grand total meal and scrap	3/	3/	299,039
Fish solubles	1,597	1,418	98,003
Homogenized condensed fish	40	65	11,777
Oil, body:			
Alewife	-	-	6,900
Herring, Alaska	-	-	727,517
Menhaden ^{2/}	-	-	30,814,537
Sardine, Pacific	3/14,200	-	83,010
Tuna and mackerel	3/37,816	27,853	751,590
Other (including whale)	40,920	27,250	1,087,610
Total oil	92,936	55,103	33,471,164

1/Preliminary data.

2/Includes a small quantity produced from thread herring.

3/Not available on a monthly basis.

tion of homogenized condensed fish amounted to 40 tons--25 tons less than in January 1961.

* * * * *

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January 1962: Based on domestic production and imports, the United States available supply of fish meal during January 1962 amounted to 28,200 tons--15,900 tons or 130 percent more than in January 1961. Domestic production was slightly less, but imports were 15,900 tons greater than in January 1961. Peru continued to lead other countries with shipments of 20,100 tons during January 1962.

The total United States supply of fish meal in 1961 (517,000 tons) exceeded the peak year 1959 when the quantity amounted to nearly 440,000 tons.

The United States supply of fish solubles (including homogenized fish) during January 1962 totaled 1,900 tons--208 tons more than in the same month of 1961. Solubles and homogenized fish manufactured

U. S. Supply of Fish Meal and Solubles, January 1962 and Comparative Data			
Item	January		
	1962/	1961	Total
Fish Meal and Scrap:			
Domestic production:			
Menhaden	-	-	246,990
Tuna and mackerel	1,641	1,567	21,432
Herring, Alaska	-	-	3,810
Other	1,091	1,171	26,807
Total production	2,732	2,738	299,039
Imports:			
Canada	2,587	1,382	38,218
Peru	20,082	6,969	151,439
Chile	1,157	841	12,074
Angola	-	-	1,543
Republic of So. Africa	1,500	280	13,026
Other countries	101	59	1,545
Total imports,	25,427	9,531	217,845
Available fish meal supply	28,159	12,269	516,884
Fish Solubles:			
Domestic production ^{2/}	1,637	1,483	109,780
Imports:			
Canada	208	39	1,001
Denmark	-	-	28
Other countries	65	180	5,710
Total imports	273	219	6,739
Available fish solubles supply	1,910	1,702	116,519

1/Preliminary.

2/50 percent solids. Includes production of homogenized condensed fish.

from domestically-caught fish made up 86 percent of the January 1962 supply.



Michigan

COMMERCIAL FISHERY LANDINGS FROM GREAT LAKES WATERS, 1961:

Michigan commercial fishermen caught nearly 24 million pounds of fish from Great Lakes waters in 1961, a drop of about one million pounds from 1960. The 1961 catch at ex-vessel was valued at \$2,900,000, approximately \$97,000 less than in 1960 but only \$10,000 shy of the annual 40-year average. The amount of the 1961 catch was down roughly 2 million pounds from the yearly average for 1920 through 1960.



Lake herring, chubs, carp, and yellow perch made up 77 percent of the total in 1961: lake herring, 7,295,000 pounds; chubs, 6,321,000; carp, 2,718,000; and yellow perch, 2,183,800 pounds.

The Lake trout catch, once an important part of Michigan's Great Lakes total, slumped to a new low of 214,500 pounds with the bulk coming from Lake Superior. From 1920 through 1944, the State's commercial fishermen consistently took 5 to 6 million pounds of lake trout each year. Since then, their take has steadily waned with sea lamprey predation leaving but a small remnant of the lake trout fishery.

Whitefish populations have suffered a similar fate in the Great Lakes as reflected by 1961 catches. Only 901,600 pounds of whitefish were taken by Michigan's commercial fishermen in 1961, the seventh lowest catch on record.

The 1961 commercial smelt catch was the lowest since 1950, nearly 1,400,000 pounds.

Michigan's 1961 catches by waters were: Lake Michigan, 4,328,000 pounds; Green Bay, 2,908,300; Lake Superior, 8,060,200; Lake Huron, 3,578,850; Saginaw Bay, 3,178,900; and Lake Erie, 1,921,340 pounds.

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Nets

SYNTHETIC NET WEBBING OFFERS LESS RESISTANCE WHEN TOWED:

Various net materials with approximately equal wet-knot strengths were used for manufacturing net webbing of equal mesh size (110 mm. mesh opening) and towed in a tank for testing ship models. The webbings were stretched on a 1 m² frame. The thinner net materials made of synthetic fibers showed a lower resistance than Manila, and the frequently expressed opinion that plaited threads have a greater towing resistance than twisted ones was found incorrect. With greater towing speed, plaited Perlon showed a lower resistance than the twisted Perlon and a still lower one than Manila. (Deutsche Seiler-Zeitung, vol. 79, no. 3, 1960.)



North Atlantic Fisheries

Exploration and Gear Research

TRAWL INSTRUMENTATION SYSTEM TESTED:

M/V "Delaware" Cruise 62-2 (February 28-March 9, 1962): Testing and evaluation trials of a trawl instrumentation system for taking various measurements on otter trawl and other nets while in operation were conducted aboard the U. S. Bureau of Commercial Fisheries exploratory fishing vessel *Delaware* during this cruise.

The system is comprised of several experimental devices designed primarily to take measurements of the spread between otter boards, between trawl wing ends, between the headrope and footrope, to measure the depth of the trawl, the temperature of the water, and to tell whether or not the trawl is in contact with the bottom.

The spread distances are measured by means of lengths of wire stretched between the respective points and held under tension on spring-driven reels. Data on the amount of wire run off the reel is transmitted electronically back to the vessel where it is recorded as a line of dots on a moving tape. Data from a pressure-operated potentiometer indicating depth and from a temperature transducer are similarly transmitted to the vessel and recorded. A magnetically operated switch indicates bottom contact by

illumination of a light on the shipboard recorder panel. The various data are transmitted to the vessel through 9 electrical conductors contained in the core of the trawl warp.

The distance measuring instruments and the bottom contact switch were found to function approximately as designed. The temperature and depth devices apparently have electronic "bugs" in either the transmission or recording system that have yet to be worked out. Some difficulty was also experienced with the conductor-cable trawl warp.

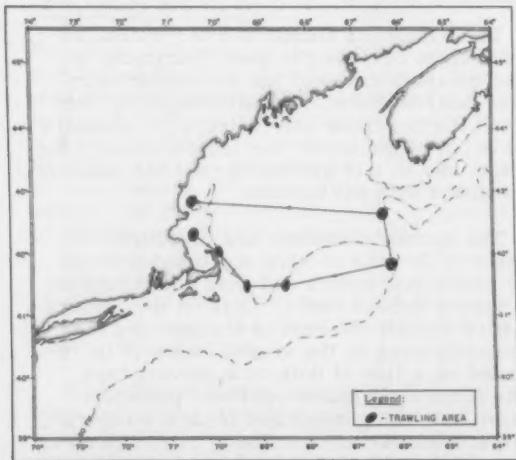
Work on the system will be continued aboard the 65-foot Rorqual to remedy the deficiencies in the devices before continuation of trials on the 148-foot Delaware.



North Atlantic Fisheries Investigations

BLOOD SAMPLES COLLECTED FROM GROUNDFISH:

M/V "Delaware" Cruise 62-3 (March 15-22, 1962): A blood type or a serological survey of haddock and other groundfish at various geographically separate areas off the New England coast was the purpose of this cruise of the research vessel Delaware of the U. S. Bureau of Commercial Fisheries. The vessel, which sailed from Gloucester, Mass., on March 15 and returned on March



Cruise of the research vessel Delaware March 15-22, 1962, to collect samples of blood from groundfish off the New England coast.

22, 1962, covered Massachusetts Bay, Nauset, Ipswich Bay, Georges Bank, and Browns Bank.

At 7 stations, 21 drags were made for haddock and other groundfish. Samples of blood were taken from haddock, cod, red hake, white hake, cusk, wolffish, halibut, and other species of groundfish. Biological information collected included: frozen whole haddock for fecundity studies; cod otoliths, scales, and measurements; frozen miscellaneous species for aquarium models; and samples of cod blood for genetic studies. There were 27 bathythermograph records taken and 27 sets of sea bed drifters released throughout the cruise.

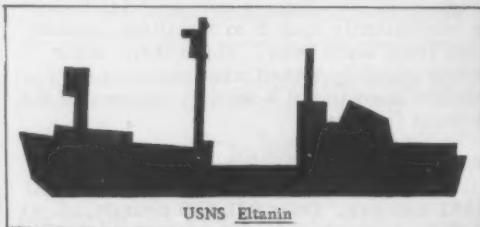
Serological sampling was possible aboard ship but extensive testing and evaluation remains to be completed.



Oceanography

NEWEST AND LARGEST UNITED STATES OCEANOGRAPHIC RESEARCH VESSEL:

The newest and largest (in tonnage) United States oceanographic research vessel, the Eltanin, made an official visit to Washington, D. C., the week of February 6, 1962. The vessel was open for inspection and scientists and representatives of government were able to see one of our Nation's best equipped and most versatile research vessels.



USNS Eltanin

The conversion of the Eltanin was completed late in 1961. She was formerly a cargo ship, with a raked icebreaker-form bow and a modified cruiser stern. With a length of 266 feet and full load displacement of 3,886 tons, the Eltanin will accommodate about 32 scientists and technicians and a 47-man civilian crew of the U. S. Navy's Military Sea Transportation Service (MSTS). The numerous laboratories aboard the vessel are spacious and well equipped, and quarters for the scientists and crew are very comfortable.

The Eltanin is really a full Antarctic research station, but afloat instead of land-based. She will be equipped not only for physical oceanography and marine biology studies, but also for atmospheric physics research, submarine geology, and meteorology. She will enable scientists to do research in areas of the world that have scarcely been explored, let alone studied scientifically.

After a short shake-down cruise, the Eltanin was expected to steam south to the Antarctic to make a series of traverses, crossing and recrossing the Antarctic convergence. Numerous universities and private corporations will conduct studies covering many fields. Included are: University of Southern California will study fundamental biological characteristics of the southern oceans; Columbia University will study plankton and nutritional factors of the area; Lamont Geological Observatory will study the ocean currents; Texas Instruments Inc. will operate the deep-sea winch, run the electronics and machine shops, and make routine oceanographic observations. (National Oceanographic Data Center Newsletter, February 28, 1962.)



Oregon

FISH COMMISSION ANNOUNCES RESEARCH AGREEMENT WITH ATOMIC ENERGY COMMISSION:

The Oregon Fish Commission has entered into a contract agreement with the U. S. Atomic Energy Commission (AEC) to study the offshore-inshore exchange of bottom fish stocks off northern Oregon and southern Washington, the Commission's Director of Research announced on March 13, 1962.

A total of \$11,000 has been given the Commission to initiate the first year of study. Objectives for the first year's operation are an intensive tagging and tag-recovery program. The Principal Investigator will be the Senior Biologist at the Commission's Astoria Laboratory.

Bottom fish taken by the U. S. Bureau of Commercial Fisheries research vessels during marine ecological studies under a similar AEC contract will be tagged and released in the study area off the Columbia River at depths of 100 to 1,000 fathoms. The Oregon

commercial trawl landings at Astoria, Newport, Coos Bay, and other ports to the north and south are to be closely monitored for tagged fish. Based on past experience, the bulk of recovered fish, if any, will appear in catches of Oregon trawlers since these vessels predominate in the area.

The principal species expected to be tagged are Dover sole and black cod or sablefish. Only species found in abundance will be tagged to enhance the likelihood of a maximum number of recoveries for analysis.

"Possible duration of this study will be six years," stated the Director of Research. He pointed out that sufficient time is necessary to obtain adequate recoveries and other information from tagging, and the study could cover a ten-year period if conditions warrant the additional time. Dover sole and sablefish are both long-lived animals and appreciable numbers of tag recoveries can be expected for at least five years after tagging.

* * * * *

NEW CRAB-TAGGING METHOD USED:

A new technique in Dungeness crab tagging has been introduced by Oregon Fish Commission biologists and early this year was being tested at the Commission's Newport Laboratory on Yaquina Bay. The head of shellfish investigations expects the new method to far surpass previous tagging attempts. Successful tests were made under aquarium conditions before beginning tagging operations.



Tagging and measuring crabs.

Crabs are a particularly difficult animal to study with respect to age determination and growth rate. Crabs shed their shells one or more times annually and carry no age-determination structure within their body, thereby making tagging the only method available for growth determination and migrational habits.

Previously, crabs have been marked by several different methods, including finger-nail polish and metal tags attached to the shell, but success was poor because of the shedded shells.

A splitting-line method using nylon dart and spaghetti tags is now being used. An insertion point on the crab's body has been found that will keep the tag with the crab through several successive sheddings, thus making it possible to study growth, migration, and distribution with a far greater degree of accuracy.

If fishermen return the tagged crabs back into the sea, it would aid the biologists greatly with the study. "We know the crabs are well distributed and surviving from tags we have received," said the head of the Commission's shellfish investigations, "and the public could do us a great favor if they would release these tagged specimens unharmed when captured." By doing this, greater numbers of samples will be available when the study begins in June 1962, and through these studies the best possible management of the resource can be obtained.

* * * * *

POND-REARED SILVER SALMON RELEASED:

"We have just completed our most successful year in pond-rearing silver salmon," observed Oregon's Fish Commission Assistant Director of Hatcheries on March 14, 1962. Over 420,000 yearling silvers were released from the Fish Commission-Weyerhaeuser Company's cooperative Millicoma Pond, an eight-acre impoundment on the East Fork of the Millicoma River, 25 miles east of Coos Bay.



Silver Salmon (Oncorhynchus kisutch)

The young fish were put into the pond in May 1961, and were fed the Oregon moist pellet diet for the following ten months. An original plant of 588,000 fingerlings was made, and the release figures show a 72 percent survival for the yearlings, now 5 to 6 inches in length. The release last year of 82,000 silvers; and 78,000 in 1960 were from smaller plants into the pond.

The Assistant Director also pointed out that 75,000 of those fish were hauled from the pond by liberation truck to the upper South Coos River tributaries, namely Williams and Tioga Creeks, and released there. Since removal of splash dams on that river, the Fish Commission has annually released salmon there so they can return as adults and spawn naturally. "This," said the Assistant Director, "is one more step forward in our program to help restore the once abundant silver salmon."

The remaining fish were released directly into the East Fork of the Millicoma River from the pond. The fish were in excellent condition. Some of the young fish will spend only 7 to 8 months in the ocean and return as jacks this fall, while those that survive another year will return as adults in the fall of 1963.

Eggs to perpetuate this pond-rearing project are taken at a fish rack located on the East Fork of the Millicoma, downstream from the pond. A limited number of adults are trapped and the rest allowed to move upstream to spawn naturally. There are 500,000 fingerlings available for planting into the pond to begin the fourth year of operation.

It is anticipated that this large release of yearling silvers could make a substantial contribution to the salmon fishery in the Coos Bay area in 1963.

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THREE MILLION SPRING CHINOOK SALMON RELEASED:

The season's release of over three million yearling spring chinook salmon into Oregon's waters, mostly into streams of the Willamette drainage system, was completed in early March 1962, the Oregon Fish Commission's Director of Fish Culture reported on March 12. Spring chinook liberations began in late November 1961 and were completed for the season with a final release by

the Fish Commission of 193,000 yearlings into the North Santiam River during the week of March 4-10, 1962.

In commenting on the excellent physical condition of the fish liberated, the Director gave much credit to the Commission's program of feeding pasteurized "starter" diet and the Oregon moist pellet, a nutritionally complete fish ration developed cooperatively by the Fish Commission and Oregon State University specialists.

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SPLASH DAM REMOVAL OPENS NEW SALMON SPAWNING AREA:

The blasting of a 20-foot high, 150-foot long, and 50-foot wide splash dam by Oregon Fish Commission personnel opened up 10 miles of new spawning area for silver salmon and steelhead on the Luckiamute River near Valsetz, the Director of Engineering announced on March 13, 1962.

The dam, built in 1903 to provide log storage, had not been used for that purpose in nearly 40 years. Debris had backed up behind the timbered structure for over 300 feet and was 20 feet deep in some places.

Two 10-case charges of dynamite were required to loosen debris and create a channel through the dam face so clearance work could begin. The Director stated that nature would provide some of the stream cleaning with the advent of spring rains and high waters, but that it was first necessary to break up several jams behind the dam so they could be hauled or flushed out. Chain saws and dynamite were employed to loosen and remove much of the accumulated material, with most of the large logs and a major portion of the jam taken out.

The three wooden structural abutments have now been completely removed, and for the first time in 60 years the stream is flowing in its normal channel. This is just one of the many stream clearance projects the Fish Commission is engaged in to provide new spawning areas for the anadromous fish of the State. "Stream clearance is not the only solution to maintaining runs of fish," said the Director, "but by cleaning up and restoring these streams to their natural state, we can establish new runs and enhance existing productivity."



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, FEBRUARY 1962:

Item and Period	1962	1961	1960	1959	1958
(1,000 Lbs., all heads-off) . . .					
<u>Total Landings, So. Atl. and Gulf States:</u>					
April	-	3,169	4,729	3,595	5,300
March	-	4,814	4,098	2,950	4,774
February	3,800	3,911	3,785	3,227	4,007
January	3,920	5,677	5,401	4,310	5,254
Jan.-Dec.	-	91,000	141,035	130,659	116,552
<u>Quantity canned, Gulf States 1/:</u>					
April	-	10	72	81	306
March	-	38	128	93	36
February	236	98	223	135	52
January	470	199	289	308	146
Jan.-Dec.	-	15,760	28,594	24,679	26,404
<u>Frozen inventories</u>					
(as of end of each mo.) 2/:					
April 30	-	27,492	20,502	23,331	12,211
March 31	-	31,345	23,232	24,893	14,501
February 28 . . .	18,874	37,612	29,063	27,555	16,359
January 31	21,328	37,842	34,332	30,858	17,963
<u>Imports 3/:</u>					
April	-	9,208	7,733	9,051	5,446
March	-	10,347	8,545	8,492	4,986
February	4/	8,932	7,657	7,481	4,466
January	12,907	12,338	8,596	8,238	5,696
Jan.-Dec.	-	126,282	113,418	106,555	85,393

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.

2/Raw headless only; excludes breaded, peeled and deveined, etc.

3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.

4/Not available.

Note: See Commercial Fisheries Review, March 1962 p. 38.

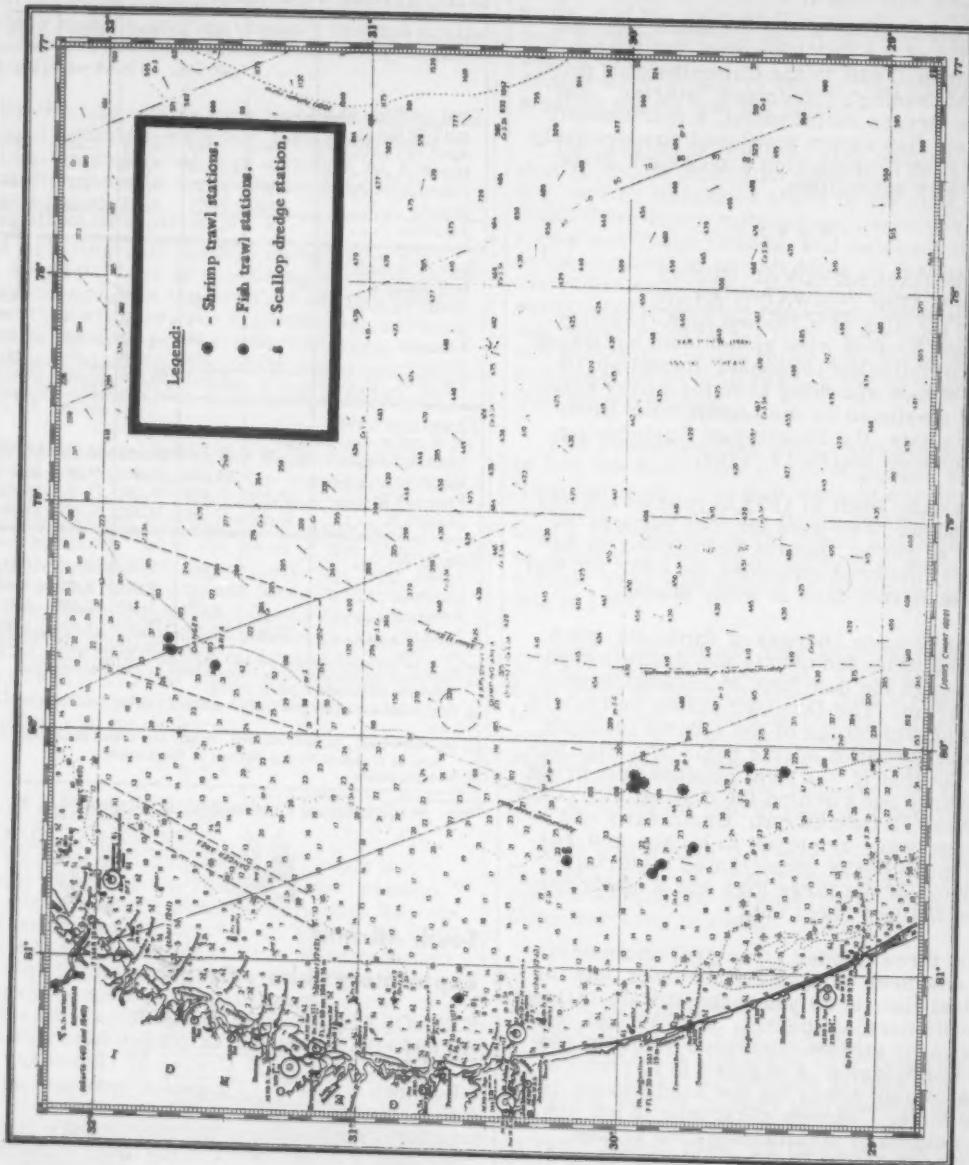


South Atlantic

Exploratory Fishery Program

EXPLORATORY FISHING FOR ROYAL-RED SHRIMP CONTINUED:

M/V "Silver Bay" Cruise 37 (February 19-March 6, 1962): To assist commercial fishermen initiating deep-water shrimp trawling and to assess the availability of deep-water royal-red shrimp (*Hymenopenaeus robustus*) between St. Augustine and Savannah were the principal objectives of the 16-day cruise of the exploratory fishing ves-



sel Silver Bay of the U. S. Bureau of Commercial Fisheries. The vessel returned to Brunswick, Ga., on March 6, 1962.

Trawling for royal-red shrimp was conducted off St. Augustine in conjunction with 7 area shrimp trawler. Catch rates of all vessels, including the Silver Bay, were generally comparable. Conventionally-rigged 70-foot 4-seam flat trawls with tickler chains and 8 ft. x 40 in. chain doors were used aboard the Silver Bay and produced catches ranging up to 200 pounds of heads-off shrimp per 2-hour drag, averaging about 100 pounds.

Snapper trawling explorations were conducted in the 19-21 fathom depth range between Jacksonville Beach and Matanzas Inlet, and in the 30-40 fathom depth range east southeast of the Savannah Lightship. An 80-100 foot roller-rigged 2-seam $4\frac{1}{2}$ inch mesh nylon fish trawl with funnel flapper and 10-foot bracket doors was fished in conjunction with "white line" depth recorder tracings. Gear damage was negligible.

Catches of mixed fish were found off Florida with vermillion snapper (Rhomboptilus aurorubens), red snapper (Lutjanus blackfordi), grey snapper (Lutjanus griseus), yellowtail snapper (Ocyurus chrysuris), grouper (Mycteroperca and Epinephelus), red and white porgy (Pagrus and Calamus), black sea bass (Centropristes striatus), grey triggerfish (Balistes capricornis), and grunt (Haemulon aurolineatum) predominating. Large red snapper were present at stations in amounts ranging from 40-200 pounds per drag. Small to large (5-16 inches) vermillion snapper were also taken at all stations and ranged up to 1,400 pounds per drag. Maximum catches of other species on a per drag basis were as follows: grey snapper, 200 lbs.; yellowtail snapper, 80 lbs.; grouper, 110 lbs.; red porgy, 840 lbs.; white porgy, 240 lbs.; black sea bass, 174 lbs.; grey triggerfish, 408 lbs.; and grunt 315 lbs.



Three drags off Georgia produced similar catches with maximum amounts on a per drag basis as follows: red snapper, 47 lbs.; vermillion snapper, 220 lbs.; grouper, 165 lbs.; black sea bass, 140 lbs.; and red porgy, 450 lbs.

Bottom topography in this area varied from smooth to slightly broken.

Note: See Commercial Fisheries Review, April 1962 p. 26.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JANUARY-MARCH 1962:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for January-March 1962.

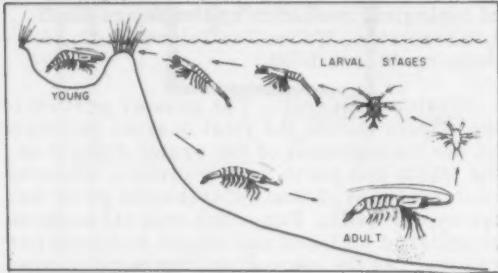
Oyster Research: The greater portion of the efforts during the first quarter have been on the management of the oyster fishery in the North and South Santee Rivers. The area contains most of South Carolina's deep-water oyster beds. For many years it has been considered polluted and closed to oyster harvesting. At the request of commercial oystermen, the State Health Department re-examined the area, and after a hearing in February the area was declared open for oyster harvesting.

Under State law these deep-water oyster beds are not subject to lease, but the harvesting of oysters therefrom could be controlled by the Division of Commercial Fisheries. The Division decided that for conservation some sort of quota system would be necessary. Consequently, Bears Bluff personnel made a survey of the area, mapping and sampling it to determine the quantity and quality of oysters available. The surveys showed that there were approximately 389 acres of actual oyster beds with a harvestable population of large (more than 3-inch in length) oysters of about 90,000 bushels (South Carolina measure) or 170,000 U. S. standard bushels.

The State's Division of Commercial Fisheries then issued permits to recognized oystermen with quotas fixed so as not to deplete the oysters. Two fairly extensive surveys and additional spot checks have been made in the Santee area to determine the extent of

harvesting. Towards the end of March it appeared that three areas of approximately $7\frac{1}{2}$ acres are reaching depletion of marketable oysters, and Bears Bluff Laboratories will recommend to the Division that these areas be closed until next year. The remaining oyster grounds still can be harvested.

Shrimp Research: Postlarval brown shrimp began to appear in experimental plankton tows during the first week of February. The postlarvae reached peak numbers during February 23 to March 9, and were continuing to enter inside waters in some numbers as late as March 30. Although no great abundance was evident this year, brown shrimp have been approximately three times as plentiful as in 1961, which was an exceedingly poor year for that species.



Life cycle of shrimp. Spawning in the ocean, the larvae (here greatly magnified) migrate to inshore nursery areas. As the shrimp grow, they return to sea where they support the most valuable of our commercial fisheries.

Although the abundance of brown shrimp larvae this year did not approach that of 1960, it should be pointed out that during that year a cold spell, which occurred when postlarvae were at maximum numbers, probably resulted in a high mortality. For this reason no comparison of the commercial prospects for brown shrimp, based on abundance of postlarvae during these two years, should be made. It can be said, however, that the outlook for the commercial catch of brown shrimp this coming June and July is considerably better than at this time in 1961, even though the catch may still be below average.

Fish Research: Postlarval spot were quite plentiful in plankton tows during this quarter, being only slightly less numerous than in 1961. This would indicate another successful spawning and continued abundance for this species. Flounders also appear to have had a successful spawning this winter,

as flounder larvae were about twice as plentiful in plankton tows as in 1961.

Experimental otter-trawling at regular stations continued on schedule throughout this quarter. Survey stations now extend from Price Creek, which is north of Charleston, to Calibogue Sound near the Georgia line. Both croaker and spot showed considerable increases in abundance in the first quarter of this year as compared with 1961. Croaker were almost nine times as numerous and spot were about twice as plentiful as last year. White shrimp were also more abundant during the quarter than in the same period of 1961, being about 1.8 times as numerous at regular stations.

Pond Cultivation: Experimental work to determine the possibility of stocking shrimp ponds with large volume irrigation pumps was continued during the quarter. A six-inch irrigation pump was used to pump approximately 3.5 million gallons of water from a nearby tidal creek into a one-acre experimental pond during February 12 to March 30. The pond had been drained and closed off completely on February 9, and pumping was begun as soon as postlarval brown shrimp began to appear in sufficient numbers. Surface water was allowed to flow off through the pond's overflow pipes during pumping operations.

During the same period a pond of equal size was opened and allowed to take in water naturally on the flood tides, for comparison of results of the two methods of stocking postlarval shrimp. It was estimated that about ten million gallons of water entered the pond during the stocking period.

These experiments were set up to determine whether or not stocking postlarval shrimp by pumping is as practical as the natural flooding method. The advantages of the pumping method are that water can be taken from a lower level in the creek and at an earlier stage of the tide, since the gates of the ponds are at such a level that water can enter the ponds naturally only on high flood tide. On the other hand, stocking by natural flooding is economical and convenient, and a greater volume of water per hour can be taken into a pond. The results of these experiments will be known later this year when the two ponds

are drained and harvested, and a comparison of results is made.

Note: See Commercial Fisheries Review, February 1962 p. 40.



Tuna

ANOTHER TAGGED BLUEFIN SWIMS ACROSS NORTH ATLANTIC OCEAN:

A second four-months crossing of the North Atlantic Ocean by a tagged giant bluefin tuna has been reported to the research associate in charge of the tagging program at the Woods Hole Oceanographic Institution, according to a December 11, 1961, news release from the Institution.

As in the first crossing, reported about a month earlier, the fish was tagged near Cat Cay in the Bahamas and was recovered near Bergen, Norway--more than 4,500 miles away. The elapsed times for the crossings were almost identical: the first fish was tagged on June 10 and the tag was recovered on October 6, 1961--118 days later; the second was tagged June 1 and recovered September 28, 1961--a period of 119 days.

Both fish were tagged by two sport fishermen participating in the tagging program: the owner, from Wilmington, Del., and the skipper, from Fort Lauderdale, Fla., of the sportfishing boat Caliban II. Both tagged fish were caught by Norwegian commercial seiners. However, in the first case the tag was found loose on the dock; in the second case the tag was still in the fish, which weighed 484 pounds. Its weight when tagged was estimated at 500 pounds.

The scientist of the Norwegian Institute of Marine Research in Bergen, who reported both recoveries, wrote that the tagged fish was of a variety known to fishermen as "long-tailed" bluefin because it is thinner than normal. Some years the tuna catches late in the season include such fish, which have previously been regarded as individuals that failed in the struggle for food. However, the Norwegian Institute scientist suggested, the tag recovery might mean that the lean condition of the fish was a result of having made the long transatlantic crossing during the feeding season.

The research associate of the Woods Hole Oceanographic Institution said that more tag-

ging of giant tuna may lead to new recoveries which will help evaluate the theory of the Norwegian scientist. Of more than 1,000 tagged bluefin tuna, fewer than 100 have been giants, weighing over 300 pounds. Of those, 89 were tagged by the sportfishing boat Caliban II.

Note: See Commercial Fisheries Review, February 1962 p. 42.

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CALIFORNIA EX-VESSEL PRICES INCREASED:

Ex-vessel prices paid for domestic-caught tuna landed at San Diego and San Pedro, Calif., were increased by \$10 per ton for bluefin, skipjack, and yellowfin tuna. Effective March 22, 1962, the new prices per ton are: bluefin, \$300, skipjack \$270, and yellowfin \$310, round weight basis, at canners' docks. The new prices were established as a result of negotiations between tuna canners and vessel owners in California.

This marks the sixth round of increases, each by \$10 per ton, since July 1, 1961. The most recent previous increase was on January 2, 1962, for skipjack and yellowfin tuna, and on March 9, for bluefin. Ex-vessel prices a year earlier per ton were: bluefin \$240, skipjack \$210, and yellowfin \$250.



U. S. Fishing Vessels

FIRST CONSTRUCTION SUBSIDY APPROVED:

Approval of the first construction differential subsidy contract for building a United States fishing vessel, as authorized by a Federal law passed in 1960 (P.L. 86-516), was announced on March 21, 1962, by the Assistant Secretary of the Interior for Fish and Wildlife.

Under the contract, the U. S. Bureau of Commercial Fisheries will pay \$37,233, or one-third the cost of a new \$117,700 otter trawler to be built by Harvey F. Gamage of South Bristol, Me., for Thomas E. Larsen of New Bedford, Mass.

To be eligible for a subsidy, a vessel must be designed to operate in a fishery which has received a finding of injury because of increased imports. At present, the New England groundfish fishery is the

only one meeting this requirement. The amount of subsidy that can be granted is that equal to the difference between the cost of construction in a domestic shipyard and in a foreign shipyard, with a maximum limitation of 33½ percent of the domestic construction cost.

Note: See *Commercial Fisheries Review*, June 1961 p. 22, November 1960 p. 91.

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FISHERIES LOAN FUND LOANS AND OTHER FINANCIAL AID FOR VESSELS, JAN. 1-MAR. 31, 1962:

From the beginning of the program in 1956 through March 31, 1962, a total of 1,133 applications for \$32,337,147 have been received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. Of the total 595 applications (\$14,120,911) have been approved, 389 (\$10,020,504) have been declined or found ineligible, 113 (\$5,546,262) have been withdrawn by applicants before being processed, and 36 (\$1,054,756) are pending. Of the applications approved, 235 (\$1,594,714) were approved for amounts less than applied for.

The following loans were approved from January 1, 1962, through March 31, 1962:

New England Area: Frank H. Thompson, Addison, Maine, \$2,250; Alger F. Burgess, Chebeague Island, Maine, \$3,500; Ora M. Hunt, Plymouth, Mass., \$5,000.

South Atlantic and Gulf Area: Herbert M. Storter, Naples, Fla., \$27,700; Kyle Collins & G. Cecil Hartley, Tampa, Fla., \$23,000; Cleveland D. Scarborough, Mt. Pleasant, S. C., \$7,970; Louis E. Williams, Mt. Pleasant, S. C., \$8,500; Eugene M. Webster and W. H. Rayburn, Aransas Pass, Tex., \$17,650; Orris A. Smith, Brownsville, Tex., \$19,000; Hollis M. Forrester, Lake Jackson, Tex., \$40,000; Jaquin Cheramie & Hubert Lafont Shrimp Co., Golden Meadow, La., \$14,510; Ellis Plaisance, Jr. & Hubert Lafont Shrimp Co., Golden Meadow, La., \$15,220; Harold J. Callais, Cut Off, La., \$13,225; Clinton P. Guidry, Lafitte, La., \$15,780; G. A. Rogers & M. H. Plaisance, Westwego, La., \$18,750; Norman C. Ronquille, Westwego, La., \$17,220.

California: James N. Blum, Eureka, \$7,377; J. V. Shaw, Salinas, \$9,000; Terence S. Hamridge, San Diego, \$3,870; Mitchell M. Tyler, San Diego, \$9,990; Russel E. Moody, Vallejo, \$3,000.

Pacific Northwest Area: Norman Fuller, Forks, Wash., \$3,500; Francis E. Caldwell, Port Orchard, Wash., \$4,800; Ray G. Knowles, Tacoma, Wash., \$2,200; Robert M. Edeno, Seattle, Wash., \$5,360; George M. Jensen, Seattle, Wash., \$7,000; Richard E. Rydman, Westport, Wash., \$20,000; Ronald W. Stedman, Westport, Wash., \$11,000.

Alaska: Clancy V. Jenkins, Douglas, \$13,300; Everett J. Buchanon, Juneau, \$3,000; Jack E. Crowley, Juneau, \$11,500; Philip C. Hoffman, Ketchikan, \$2,800; George H. Johnson, Seldovia, \$12,000; Trawlers, Inc., Seward, \$34,000; Winston E. Davies, Wrangell, \$2,500.

In the Fishing Vessel Mortgage Insurance Program, also administered by the Bureau, approval has been granted for the insurance of mortgages for the following fishing vessels during the last quarter of 1961 and the first quarter of 1962: Big Baby, Inc., Tampa, Fla., \$38,560; Thomas B. Larsen, New Bedford, Mass., \$40,000; Victoria Fishing Co., New Bedford, Mass., \$71,250. The first fishing vessel mortgage was insured in January 1961. Under the mortgage insurance program, the Department of the Interior guarantees the lender or mortgage holder the insured amount. Should the borrower fail to pay,

the Department pays but has legal recourse to the borrower's assets.

In the Construction Differential Subsidy Program, the following construction differential subsidy was approved in March 1961: Thomas B. Larsen, New Bedford, Mass., \$34,667. This was the first approval in this program. The amount approved for subsidy represents one-third the cost of a new vessel.

Note: See *Commercial Fisheries Review*, February 1962 pp. 20, 46.

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CONTRACT TO DESIGN AND BUILD SEMIAUTOMATED STERN TRAWLER-PURSE SEINER:

The first United States effort to adopt the stern trawling technique was announced early this year by a group of Rhode Islanders. A contract was awarded late in January 1962 to a firm of naval architects and builders of steel vessels of Warren, R.I., to design and build a 76-foot semiautomated dragger capable of being easily converted to purse seining.



Fig. 1 - New 76-foot semiautomated stern trawler-purse seiner rigged for stern trawling.

The vessel will be built for a new Rhode Island company to be associated with the Warren, R.I., firm. The new firm is headed by a group of business and civic leaders who have taken the challenge to develop a more productive fishing vessel in an effort to surpass that of foreign countries now fishing off the New England coast. The vessel is scheduled to be launched in late summer 1962.

Prime feature of the new design will be an advanced "over the stern" net-handling system which will speed net hauling and reduce hazards to the crew. Use of the European stern ramp will make fishing easier in bad weather, allowing more consistent catches and a shorter work week for fishermen.

"Stern trawlers of larger size, but not as advanced in automation, are now being operated by the Russians off our coasts. These trawlers, most of them built in Poland, are able to haul their nets in half the time required by United States side trawlers which have to circle an area to haul their nets and then undergo a complicated method of disconnecting fishing gear in order to get the loaded net aboard," stated the President of the group designing and building the new vessel.

The new European stern trawlers haul their nets through a stern ramp. Though faster than existing United States

**PRINCIPAL CHARACTERISTICS OF
SEMIAUTOMATED STERN DRAGGER-PURSE SEINER**

DIMENSIONS: Length over-all 76'0"; molded beam 21'6"; light draft 8'0".

RIG: Stern trawler, pilothouse control of trawling cable positioning and net hauling over stern; fitted with conventional European-type ramp.

PROPELLION (Main): Stern drive 340 horsepower Diesel, driving 60-inch 3-blade controllable pitch propeller developing 10,400-pound thrust. Propeller driven through 12-inch gear belt, 5:1 reduction, engine tandem mounted in after peak. Engine power take-off connected by gear belt to deckwinch and also to auxiliary water jet propulsion unit, controlled from pilot house.

AUXILIARY POWER: 160 horsepower deck mounted Diesel driving deck winch through torque converter. Also connected to water jet propulsion unit, pilot house controlled.

RANGE: 5,000 miles; will be capable of fishing from Grand Banks to Central American Pacific areas.

WINCH: 30" drum capacity of 1,000 fathoms of 5/8" wire, with pneumatic controls, semiautomatic level winder and hydraulic brake to be installed on the winch by Blount. Control will be from cab located at after end of pilot house overlooking entire working deck.

FISH HOLD: Total 3,500 cu. ft., 220,000 pounds of fish and ice. Vultafoam insulated, sheathed in fibreglass, metal bottom.

FISH COOLING: Optional ice or mechanically-refrigerated salt-water mist spray.

QUARTERS: Four staterooms, each containing 2 bunks, master stateroom, and centralized modern galley, built in modern domestic style.

vessels, they use the standard net-strapping method. The new automated dragger will eliminate strapping and will automatically bring in the catch clear of the stern and onto the deck.

The new vessel will be a combination stern trawler and purse-seiner in order for it to take advantage of whichever type of fishing is most profitable, thus assuring peak production throughout the whole year. It will be convertible to either method of fishing in less than a day.

Development of the new dragger continues the program of the Warren, R.I., firm of naval architects and shipbuilders to construct a series of experimental fishing vessels, including the highly successful 65-foot Atlantic tuna clipper built for a Cape Cod firm in 1961.

Only since the successful adaptation of the Warren, R.I., firm's stern drive, as on the tuna clipper, has it been possible to design a vessel combining needs of both dragger and purse-seiner: large fish hold clear of shafting, with the ability to take heavy loads in good trim and handle a mile of cable.

As a dragger the new vessel will handle 1,000 fathoms of trawl cable and be capable of trawling in water as deep as 1,200 feet on the outer edge of the Continental Shelf. It will fish initially for deep-sea lobsters. Its stern-hauled net-handling rig will land the net with greater safety to the lobsters, increasing their life in captivity and allowing them to be brought to market in fresher condition. It will also have the latest equipment for holding the lobsters.

In late spring and summer, when the offshore lobsters are shedding, the vessel will be used as a purse seiner

and fish for menhaden and tuna. Because of its refrigeration system, it will be able to range for tuna up to 150 miles off the coast.

Among its features is a 60-inch controllable pitch propeller developing a thrust in excess of 10,000 pounds and a water jet auxiliary propulsion system designed to be an aid in regulating position while pursing the net. The main engine, as well as the auxiliary engine, at the option of the skipper, will be capable of driving a water jet propulsion unit located in the stern. Either engine can thus propel the boat in any direction.



Fig. 2 - New stern trawler-purse seiner rigged for seining.

There will be individual staterooms for the crew, one of the first United States-rigged vessels to be so equipped.

The vessel will carry a standard size crew and if a contemplated processing plant is located in the Rhode Island area, there will be an increase of 5 to 10 additional shore jobs. The decision to build and operate a processing plant in Rhode Island to fit fishing operations will be considered when the boat has successfully met her designer's requirements.

One of the great hopes of the designer is that its bad weather fishing ability may lead to a five-day work week for the fishermen. More efficient deck gear plus more speed to and from the fishing grounds may allow this.

"At stake also is the ability of American private enterprise to face up to a harsh competition right under our noses," the President of the Warren, R.I., firm said. "We will never out-distance the foreign fleets on our fishing grounds, without new designs and developments."

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**DOCUMENTATIONS ISSUED AND
CANCELLED, FEBRUARY 1962:**

During February 1962, a total of 15 vessels of 5 net tons and over were issued first documents as fishing craft in the United States as compared with 21 in February 1961. Also, there were 4 more documents cancelled for fishing vessels in February 1962 than in the same month in 1961.

Table 1 - U. S. Fishing Vessels 1/—Documentations Issued and Cancelled, by Areas, February 1962 with Comparisons

Area (Home Port)	Feb.		Jan.-Feb.		Total 1962
	1962	1961	1962	1961	
..... (Number)					
<u>Issued first documents 2/</u>					
New England	-	4	2	7	33
Middle Atlantic	-	-	-	-	12
Chesapeake	2	1	6	4	75
South Atlantic	2	2	4	3	44
Gulf	5	7	15	18	103
Pacific	6	4	12	9	149
Great Lakes	-	1	-	1	12
Puerto Rico	-	2	-	2	2
Total	15	21	39	44	430
<u>Removed from documentation 3/</u>					
New England	3	2	5	3	20
Middle Atlantic	1	-	9	2	32
Chesapeake	1	2	3	8	28
South Atlantic	4	-	7	5	29
Gulf	6	11	19	17	104
Pacific	11	8	27	17	111
Great Lakes	1	-	6	2	17
Hawaii	-	-	1	-	-
Total	27	23	77	54	341

Note: See table 2.

Table 2 - U. S. Fishing Vessels 1/—Documents Issued and Cancelled, by Tonnage Groups, February 1962

Gross Tonnage	Issued 2/		Cancelled 3/	
 (Number)			
5-9	2	-	3	-
10-19	6	-	13	-
20-29	1	-	1	-
30-39	-	-	4	-
40-49	1	-	-	-
50-59	-	-	2	-
60-69	1	-	1	-
70-79	4	-	-	-
100-109	-	-	1	-
120-129	-	-	1	-
310-319	-	-	1	-
Total	15	-	27	-

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

2/Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 10 in 1962, 2 in 1961, and 3 prior to 1961. Assigned to areas on the basis of their home ports.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JANUARY 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in January 1962 were up 1.8 percent in quantity and 2.9 percent in value as compared with December 1961. The increase was due primarily to more imports of frozen fillets (groundfish and other types), canned sardines in oil, canned salmon, and fresh and frozen sea scallops. The increases were almost offset by a drop in the imports of all types of canned and frozen tuna, frozen salmon, canned sardines not in oil, frozen frog legs, and frozen shrimp.

Compared with the same month in 1961, imports in January 1962 were up 4.6 percent in quantity and 22.0 percent in value. The increase in value was due to the higher prices for nearly all imported fishery products. The general increase came about because of more imports of fillets other than groundfish (including swordfish, halibut, and salmon), frozen tuna other than albacore, tuna loins and discs, canned tuna in brine, canned sardines in oil, canned crab meat, frozen spiny lobsters, live lobsters from Canada, and frozen sea scallops (from Canada). The increases were offset somewhat by declines in the imports of groundfish fillets (especially blocks and slabs), frozen albacore, frozen salmon from Canada, canned sardines not in oil, and frozen frog legs.

In 1961 the imports of fresh, frozen, and processed edible fish and shellfish were up 1.8 percent from the 1,010.4 million pounds reported in the previous year. The value of the imports was up 9.4 percent from the \$304.8 reported in 1960. Higher prices for many imported fishery products in 1961 accounted for most of the increase in value. Imports in 1961 were greater for all types of frozen fillets (including halibut, salmon, and swordfish), frozen albacore tuna, tuna loins and discs, canned tuna in brine, canned sardines in oil and not in oil, frozen shrimp, and fresh and frozen scallops from Canada. The failure of the sardine fisheries in California and Maine was responsible for the increase in canned sardine imports. Offsetting the increases, were less imports of frozen tuna other than albacore (principally yellowfin), frozen salmon from Canada, canned salmon from Japan, and frog legs from Cuba.

U. S. Imports and Exports of Edible Fishery Products, January 1962 with Comparisons

Item	Quantity		Value	
	Jan. 1962	Year 1961	Jan. 1961	Year 1961
			(Millions of Lbs.)	(Millions of \$)
Imports:				
Fish & Shellfish: Fresh, frozen, & processed 1/ . . .	89.0	85.1	1,026.3	32.2 26.4 333.6
Exports:				
Fish & Shellfish: processed only 2/ (excluding fresh & frozen) . . .	3.5	2.5	28.6	1.4 1.1 13.2

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in January 1962 were up 40.0 percent in quantity and 27.3 percent in value as compared with January 1961. The January 1962 exports were greater than in the same month of 1961 because of higher exports of canned mackerel, canned salmon, canned sardines not in oil, frozen shrimp, and canned squid.

Compared with the previous month, the exports in January 1962 were down 23.9 percent in quantity, but were up 7.7 percent in value.

Processed fish and shellfish exports for 1961 were down 41.3 percent in quantity and 31.2 percent in value as



compared with 1960. The following leading products were exported in substantially lesser quantities in 1961 as compared to 1960: fresh and frozen salmon (1,095,000 pounds in 1961 and 2,849,000 pounds in 1960), canned salmon (7,186,000 pounds in 1961 and 11,924,000 pounds in 1960), canned sardines not in oil (7,475,000 pounds in 1961 and 20,955,000 pounds in 1960), canned shrimp (2,502,000 pounds in 1961 and 3,482,000 pounds in 1960), and canned squid (3,433,000 pounds in 1961 and 7,530,000 pounds in 1960). There were increases in the exports of canned mackerel (from 1,305,000 pounds in 1960 to 3,908,000 pounds in 1961) and frozen shrimp (from 2,989,000 pounds in 1960 to 4,771,000 pounds in 1961 1/).

1/Does not include re-exports which were substantial in 1961.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which could be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty had not been announced as of early March.

Imports from January 1-March 3, 1962, amounted to 8,050,911 pounds (about 383,400 std. cases), according to data compiled by the Bureau of Customs. During the same period in 1961 a total of 7,475,964 pounds (356,000 std. cases) had been imported.

Note: See p. 77 of this issue.

* * * * *

IMPORTS AND EXPORTS OF FISHERY PRODUCTS, 1961:

The trend toward obtaining a larger part of United States requirements for fishery products from imports continued in 1961. U. S. imports of several major fishery products reached record levels. Among these were groundfish and ocean perch fillets, scallops, spiny lobsters, shrimp, canned tuna in brine, canned oysters, and fish meal.

In 1961, over 44 percent of the United States supply of fishery products was obtained from foreign countries. Imports supplied the major share of many fishery commodities consumed in the United States. For the first time, imports of shrimp (round-weight basis) were greater than domestic production.

Compared with 1960 receipts, substantial increases were reported in imports of tuna loins and discs, canned sardines, and swordfish. Principal items showing decreases from 1960 were fresh, frozen, and canned salmon, fresh or frozen tuna, and fresh-water fillets.

United States exports of the leading edible fishery products of domestic origin were down one-third from 1960. Fish oil exports declined by 15 percent. Among the other products exported in substantially lesser quantities during 1961 were canned sardines, salmon, shrimp, and squid. Canned mackerel and frozen shrimp were exported in greater quantities.

Review of Imports (1961 compared with 1960): In 1961, imports of groundfish and ocean perch fillets and blocks increased 26 percent. This included an increase of 32 percent in the quantity of blocks or slabs. Canadian shipments of blocks and slabs increased by 24 percent, Icelandic by 49 percent, and Danish by 40 percent. Imports of fillets

Table 1 - U. S. Imports of Selected Fishery Products, 1960 and 1961

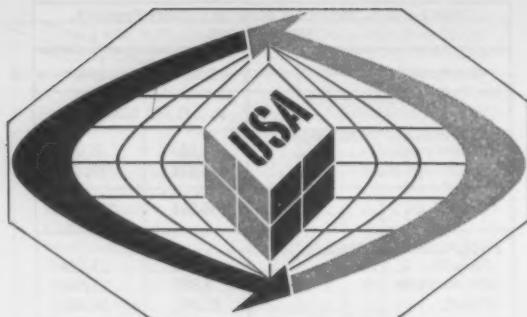
Commodity	1961	1960
<u>Groundfish and ocean perch:</u>	<u>... (1,000 Lbs.) ...</u>	
Fillets	76,589	65,878
Blocks and slabs	118,675	89,672
Total	195,264	155,550
<u>Fillets other than groundfish:</u>		
Flounder	18,420	18,724
Fresh-water fish	9,839	11,805
Other	21,447	18,125
Swordfish (incl. steaks, fillets, & chunks)	22,228	20,315
<u>Tuna, fresh or frozen:</u>		
Albacore	71,946	69,801
Other than albacore	128,804	164,847
Total	200,750	234,648
Tuna loins and discs	8,348	6,711
<u>Tuna, canned in brine:</u>		
Albacore	29,116	15,775
Other than albacore	29,117	35,384
Total	58,233	51,159
Tuna, canned in oil	430	596
Bonito and yellowtail, canned	10,354	9,904
Crab meat, canned	4,238	4,507
<u>Lobster, fresh or frozen:</u>		
Northern	21,299	21,403
Spiny	32,590	32,346
Lobster and spiny lobster, canned	2,828	2,939
Oysters, mostly canned	7,702	7,025
<u>Salmon:</u>		
Fresh or frozen	12,310	13,472
Canned	7,381	19,113
<u>Sardines:</u>		
Canned in oil	27,877	21,236
Canned not in oil	14,611	6,141
Sea scallops	8,653	6,873
Shrimp, mostly frozen, some canned and dried	126,282	113,418
Fish meal	435,690	263,122
Fish solubles	13,478	6,348

other than groundfish increased slightly; fresh-water fillets declined by 17 percent.

Imports of frozen albacore tuna showed a small rise, whereas frozen tuna other than albacore decreased 22 percent. In total, this amounted to a 14-percent decrease in imports of fresh and frozen tuna. Imports of tuna loins and discs rose by 24 percent, but the quantity was much less than the other types of tuna imported.

Imports of canned tuna in brine increased by 18 percent. Japan accounted for 73 percent of the total quantity. Canned bonito and yellowtail imports increased 5 percent; Peru was the principal supplier of those products.

A new high was reached in imports of frozen spiny lobster. Principal gains were from Brazil, Mexico, South Africa, and the Bahamas. Imports of northern lobster were slightly less than during 1960.



Canned salmon imports decreased 61 percent. Imports from Japan, the principal supplier, declined from 18 million pounds in 1960 to 5.5 million pounds in 1961. Fresh or frozen salmon from Canada, the main supplier, dropped slightly.

Norway and Portugal supplied the major share of the imported canned sardines in oil. Most of the canned sardines not in oil were imported from the Union of South Africa. Both showed important increases.

Imports of sea scallops--nearly all from Canada--increased 26 percent from 1960 to 1961.

Shrimp, mostly frozen, increased 11 percent. For the first time in the history of the shrimp fishery, the quantity of imports exceeded that of the domestic catch. Mexico accounted for 63 percent of total imports.

In 1961 fish meal imports reached an all-time high of 435.7 million pounds (217,845 short tons) for a 66-percent increase over the preceding year. Over half of the imports were from Peru. Imports of fish solubles were also 12 percent greater.

Review of Exports (1961 compared with 1960): During 1961, exports of sardines not in oil amounted to 7.5 million pounds, compared with 20.9 million pounds in 1960, or a decrease of 64 percent. Shipments to the Philippines, Ecuador, and New Zealand declined.

Table 2 - U. S. Exports of Selected Fishery Products, 1960 and 1961

Commodity	1961	1960
... (1,000 Lbs.) ...		
Fish oils	122,486	143,659
Misc. fish, mostly fresh-water, fresh or frozen	3,608	4,928
Oysters, shucked	580	604
<u>Salmon:</u>		
Fresh or frozen	1,095	2,849
Canned	7,186	11,924
Mackerel, canned	3,900	1,305
Misc. canned fish, mostly Calif. anchovies	453	483
<u>Sardines:</u>		
Canned not in oil	7,475	20,955
Canned in oil	185	264
<u>Shrimp 1/:</u>		
Fresh or frozen	4,771	2,989
Canned	2,502	3,482
Squid, canned	3,433	7,530

^{1/}Does not include a substantial amount of re-exports of Mexican shrimp, principally to Japan.

Fish oil exports dropped 15 percent owing to reduction in shipments to Sweden, the Netherlands, and West Germany. A large gain was noted in exports to Canada and Norway. United States exporters of fish oil met strong competition from Peruvian fish oil in markets of Western Europe.

A decline in shipments of canned salmon to the United Kingdom accounted for most of the 40-percent drop in canned salmon exports.

Squid exports were about half those of 1960. Exports to the Philippines dropped from 4.4 million pounds in 1960 to 309,000 pounds in 1961.

Exports of canned mackerel tripled in 1961 to 3.9 million pounds. El Salvador received 802,000 pounds; the remainder went to various countries in smaller amounts.

Exports of domestic fresh or frozen shrimp increased 60 percent; Japan and Canada each received about 2 million pounds. Canned shrimp exports declined 28 percent. (Does not include a substantial amount of re-exports, principally to Japan.)



Virginia

MARINE SCIENTISTS CONTINUE STUDIES OF RADIOACTIVE WASTES:

The Atomic Energy Commission renewed its grant to the Virginia Institute of Marine Science by awarding an additional \$20,000 for a continued study of the role of filter-feeding marine organisms in removing radioactive wastes from river and bay waters, according to the Director of the Institute. The studies were begun in 1961 with an initial \$20,000 grant.

"Our scientists are among the first to consider the role of living organisms in removing radioactive particles suspended in the water," the Institute's Director reported. "Since the Hampton Roads-York River area is now a center for atomic-powered Navy and commercial vessels, and since the use of this source of energy will grow rapidly in the next decade, it is most appropriate that these studies be carried out by Virginia's marine laboratory."

One of the Institute's researchers in recent years has conducted experiments which indicate that oysters deposit enormous quantities of organic and inorganic material on the bottom. Through field and laboratory experiments he is learning the stability of these deposits, of what they consist, and the size of the particles. The other researcher on the project is determining the amount of radioactive material which may be tied up in these deposits.

Commercial growers frequently plant 300,000 oysters of the size being used in experimental work by the Institute's researchers on each acre of their oysterbeds. Calculations arrived at by the researchers indicate that these oysters may deposit over a ton of material per acre each week during growing seasons.

During the first months of work, the two researchers set up equipment and conducted many preliminary experiments to test the reliability of the equipment.

"'Red tide' organisms which have appeared in great quantities in the York River during July and early August 1961 so disrupted the feeding of oysters that it took them from 7 to 10 days to resume normal feeding activities," one of the researchers reports. "During the time of 'red tides' the deposition rate by oysters and other plankton feeders might be greatly reduced," he concluded.

During the coming year, one-celled plants will be cultivated in sea water fertilized with radioactive chemicals in the laboratory. The scientists will feed these plants to experimental oysters and later measure the amount of radioactive material incorporated into their bodies.

Another laboratory project involves feeding oysters mixtures of radioactive plants and suspended silt and clay on which radionuclides are attached in amounts commonly encountered in the marine environment. The permanence of radionuclides in the deposits will then be determined.

Other experiments are being set up to measure the effect of turbidity and temperature on the rate at which the deposits are made. A controlled temperature system will be installed to raise the temperature from 0° C. to 30° C. (32° F. to 86° F.), temperatures to which oysters are subjected in the river, during which time varying amounts of food and suspended clays and silts can be introduced.

The results of these studies financed by the Atomic Energy Commission will help scientists predict the outcome of dumping nuclear wastes or the accidental release of radioactive material into tidal waters of the state by a nuclear reactor. If they remain suspended in the water rather than tied up in bottom deposits, tidal action may rapidly di-

lute and disperse them. If, on the other hand, they are concentrated by filter-feeding organisms and tied up in bottom deposits, they may remain in the immediate vicinity for long periods of time.



Wholesale Prices, March 1962

Although fishery landings in New England and other parts of the country were seasonally heavier this March, they were lighter than a year earlier. The March wholesale price index for edible fishery products at 120.3 percent (using the new base of 1957-59=100) was 0.5 percent higher than in the previous month and 13.2 percent higher than in March 1961.

A spurt of fresh shrimp at New York City shipped from the South Atlantic States in mid-March caused a 4.8-percent drop in prices for that product. This decline was responsible for the drop of 1.8 percent from February to March in the index for processed fresh fish and shellfish. Not quite offsetting the drop in shrimp prices was an increase of 11.1 percent in fresh haddock fillet prices at Boston because of insufficient landings to meet the demand. Compared with March 1961, the subgroup index was up 14.7 percent with prices this March for all items substantially higher. Prices were up for fresh haddock fillets by 14.7 percent, for fresh shrimp at New York City by 17.7 percent, and for shucked oysters by 10.8 percent.

Wholesale prices of the items under the drawn, dressed, or whole finfish subgroup were mixed and the subgroup in-



Raw breaded shrimp on conveyor belt moving to weighing and packaging line.

dex from February to March rose 2.7 percent. Prices of large haddock at ex-vessel at Boston this March were up 15.5 percent as compared with the previous month. This increase was offset somewhat by lower prices for whitefish (down 3.3 percent) at Chicago and frozen western halibut (down 0.4 percent) at New York City. More Canadian whitefish accounted for the lower prices on that product. Compared to a year earlier, March 1962 prices for the subgroup were 7.8 percent higher with nearly all items significantly higher priced. Although this March haddock landings at Boston were seasonally higher, they were substantially below a year earlier. This accounted for the 31.5 percent higher ex-vessel prices for fresh haddock this March. Signifi-

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			Mar. 1962	Feb. 1962	Mar. 1962	Feb. 1962	Jan. 1962	Mar. 1962 3
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					120.3	119.7	115.2	106.3
Fresh & Frozen Fishery Products:					119.4	118.5	112.4	104.6
Drawn, Dressed, or Whole Finfish:					121.8	118.6	109.7	113.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.16	.14	124.0	107.4	78.1	94.3
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.40	116.8	117.3	110.4	96.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.86	.86	120.5	120.5	120.5	122.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.75	.78	111.9	115.7	110.5	104.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.74	.74	120.4	120.4	92.5	114.7
Processed, Fresh (Fish & Shellfish):					123.2	125.4	117.9	107.4
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.50	.45	121.4	109.3	87.4	100.8
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.00	1.05	117.2	123.1	110.2	99.6
Oysters, shucked, standards	Norfolk	gal.	7.75	7.75	130.7	130.7	132.8	118.0
Processed, Frozen (Fish & Shellfish):					109.0	107.7	105.5	90.2
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	100.1	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.35	.33	101.1	96.7	96.7	98.2
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.34	.34	119.2	119.2	115.7	106.9
Shrimp, lge. (26-30 count), brown, 5-lb. pk.	Chicago	lb.	.95	.95	112.1	112.1	108.5	82.4
Canned Fishery Products:					122.1	122.1	120.4	109.6
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	122.0	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	116.2	88.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	12.81	12.81	164.3	164.3	157.9	112.2

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/ Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/ Recomputed to be comparable to 1957-59=100 base indexes.

cantly smaller frozen stocks in cold storage were responsible for the higher prices (up 20.9 percent) at New York City for western halibut. Fresh whitefish at Chicago was priced 7.1 percent higher this March than a year earlier. But with slightly more frozen salmon on hand this year, March prices at New York City for that product were down 1.4 percent as compared to a year earlier.

Prices for processed frozen fish and shellfish in March 1962 were 1.2 percent higher than the previous month principally because of higher prices for frozen haddock fillets (up 4.6 percent). Compared to the same month last year, March 1962 prices were up a substantial 20.8 percent. The continued scarcity was responsible for the 36.1-percent increase in the Chicago price for frozen shrimp. Lighter supplies caused the frozen fillet prices at Boston to go up for ocean perch by 11.5 percent, for haddock by 3.0 percent, and for flounder by 2.6 percent.

The index for the canned fishery products subgroup remained steady at the February 1962 level. The 1961/62 season for California sardines ended on February 28 with the pack even smaller than that in 1960. Maine sardine stocks continued to dwindle and demand exceeded the available supplies. Canned pink salmon stocks also were at a low level. Canned tuna stocks were moderate and demand was good, but there was no significant change in prices except that some trade discounts were reported in advertised brands. However, the canned tuna pack in California for the first quarter this year was 11 percent less than in the first quarter of 1961. March 1962 prices for canned fishery products were up a substantial 11.4 percent from a year earlier. All products in the subgroup were priced substantially higher this March: canned Maine sardine prices were up 46.4 percent, canned California sardine prices were up 34.7 percent, canned tuna prices were 10.4 percent higher, and canned pink salmon prices were up 1.8 percent.





FOREIGN

International

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

FISHERIES COMMITTEE MEETING:

The Fisheries Committee of the Organization for Economic Cooperation and Development (OECD) held its third session in Paris, France, on March 19-21, 1962. The agenda for the meeting included: (1) Study of subsidies and other financial support to fisheries of member countries, (2) Report on the European market for canned fish, (3) Study of sanitary regulations affecting international trade in fish and fish products, (4) Market situation for Icelandic fish products, (5) Technical assistance programs in less-developed member countries, and (6) Work program for Fisheries Committee in 1962 and 1963.

A. W. Anderson, formerly Assistant Director of the U. S. Bureau of Commercial Fisheries and now Regional Fisheries Attaché in Copenhagen, Denmark, is the U. S. representative on the Fisheries Committee.

On September 30, 1961, the OECD supplanted the Organization for European Economic Cooperation (OEEC). The United States

and Canada, which were associate members of the OEEC, are full members of the 20-nation OECD. In addition to the United States and Canada, the other members are the six Common Market countries, the United Kingdom, Norway, Iceland, Sweden, Denmark, Portugal, Switzerland, Austria, Greece, Spain, Turkey, and Ireland.

Under the OECD, a Fisheries Committee was established to carry out a program to promote the harmonious development of fisheries and to iron out trade problems. This Committee will have close links with the OECD Trade Committee and others concerned with economic policies. Since September 1961, the Committee has met twice to begin work on such major trade problems as subsidies and supports, import restrictions, sanitary requirements, and marketing practices.

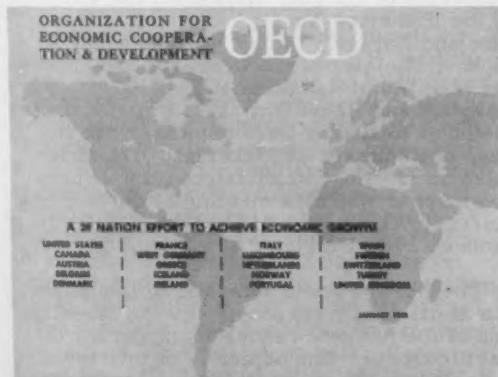


Fig. 1 - Through cooperative actions, OECD will spur economic growth, encourage trade, and aid lesser-developed countries.

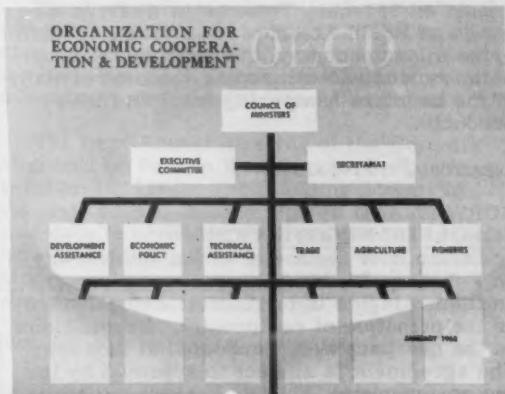


Fig. 2 - A Fisheries Committee in OECD will work closely with other committees concerned with economic policies of member countries.

The program of the Committee involves confrontations and consultations between member countries on fisheries policies, examining problems of mutual interest, studying market situations for major fishery products, improving trade, and assisting develop-

International (Contd.):

oping countries in problems of production, export, and distribution.

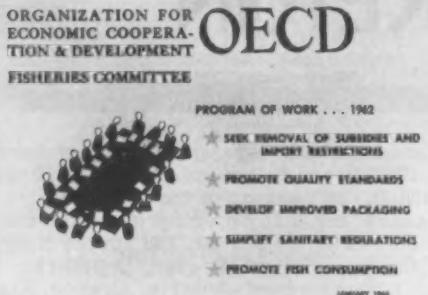


Fig. 3 - The OECD Fisheries Committee will promote harmonious development of fisheries and iron out trade problems.

The over-all aim of the OECD is to achieve sound economic expansion. The new organization will stress the need for major free world nations to consult closely in their economic policies. It will also seek cooperation to promote economic, social, and technical development in the less advanced regions of the world.

In 1960, OEEC issued a comprehensive report on "Fishery Policies in Western Europe and North America" describing the fisheries in each country, the tariff and support policies, and recommending removal of many of the barriers hampering trade in fishery products.

TERRITORIAL FISHING RIGHTS

NORWAY AND U. S. S. R.
CONCLUDE NEGOTIATIONS:

Officials of the Soviet Union and Norway, on February 22, 1962, signed an agreement on fishing rights in territorial waters based on the principle of reciprocity. Negotiations on the new pact were conducted at Moscow. The agreement is subject to approval by the two governments.

The pact will give Soviet fishermen the right to operate between 6 and 12 nautical miles off the Norwegian coast, until October 31, 1970. Similar privileges were extended to British fishermen under the British-Norwegian pact of November 17, 1960.

In return, Norwegian fishermen will enjoy special rights to operate in certain wa-

ters within the Soviet 12-mile limit, including the Nordfargrunden fishing bank in the Varanger Bay area, and the Henøy banks off Cape Niemetski. Both were important fishing grounds for Norwegians until the Soviet Union extended the limit of its territorial waters shortly after World War II to 12 miles.

Two nations, Great Britain and the Soviet Union, have so far signed pacts with Norway to secure rights within its extended fishery zone. Negotiations with France are expected to start soon. (News of Norway, March 15, 1962.)

Note: See Commercial Fisheries Review, January 1962 p. 60.

INTERNATIONAL NORTH PACIFIC FUR SEAL COMMISSION

REPORT ON FIFTH ANNUAL MEETING:

The International North Pacific Fur Seal Commission approved continuation of its wide-ranging program of research by scientists of the four contracting countries and to a harvest of fur seals in 1962 that will be comparable to last year's take. The latter decision reflects the success that has attended the work of the Commission in developing and maintaining the stocks of fur seals of the North Pacific to levels designed to produce the highest sustainable yield. This action was taken at the Fifth Annual Meeting of the Commission in Ottawa, Canada, February 7-9, 1962.

Established under the provision of the 1957 Interim Convention on Conservation of the North Pacific Fur Seals, the Commission is composed of representatives from the member countries of Canada, Japan, the U. S. S. R., and the United States. The Commissioners are George R. Clark, Deputy Minister of Fisheries of Canada; Masayoshi Ito, Director of the Fisheries Agency, Ministry of Agriculture and Forestry of Japan; Aleksander A. Ishkov, Minister of the U. S. S. R. and Chief of the Main Administration of Fish Economy of Gosplan; and Ralph C. Baker, Chief of the Division of Resource Development, U. S. Bureau of Commercial Fisheries. The Commission meeting, which began on February 7, was preceded by a meeting of the Standing Scientific Committee of the Commission from January 29 to February 6.

The North Pacific Fur Seal Commission has as its major responsibility the investigation of the fur seal resources of the North Pacific Ocean. The objective of this investigation is to determine the measures which will make possible the maximum sustainable yield from those resources, with due regard

International (Contd.):

for their relation to the productivity of other living marine resources in the area.

Under the terms of the Convention pelagic sealing (killing of seals at sea) is forbidden except for certain specific numbers that may be taken pelagically by scientists of the member countries for research purposes and the operations of aborigines using primitive weapons. All harvesting is done on the breeding grounds under the control of the Soviet Government on Robben Island in the sea of Okhotsk and the Commander Islands in the Western Bering Sea, and under the control of the United States on the Pribilof Islands in the Eastern Bering Sea. During 1961 the commercial land take by the U.S.S.R. was 10,882 seals and by the U. S., 95,974 animals. The Convention contains a provision whereby Canada and Japan each receive 15 percent of the seal skins taken by the United States commercial operations on the breeding grounds and, subject to certain stipulations, a similar percentage of the U.S.S.R.'s commercial take on the breeding grounds.

In accordance with plans developed by the Commission, research agencies of the four participating countries carry out research at sea. Research and management on the breeding grounds are conducted by the United States on the Pribilofs and by the Soviet Union on the Commander Islands and on Robben Island. The scientific investigations are concerned with dynamics of the fur seal populations, distribution and migration at sea, feeding habits, and harvesting methods.

During 1961 scientists of the four member countries conducted extensive researches at sea and the results of the operations, together with those of the U.S.S.R. and the United States on the breeding grounds under their respective controls, were reviewed by the Commission. Reports on the pelagic investigations provided valuable information on the migratory patterns and range of feeding habits of the seals. An extensive tagging program was conducted on the breeding grounds as part of the scientific studies; Soviet scientists tagged 10,472 seal pups on Robben Island and 11,069 on the Commander Islands, and United States scientists tagged 50,000 pups and 740 yearlings and two-year-old seals on the Pribilof Islands. Recovery of tags from recaptured young seals indicates a certain intermingling of the herds.

with some United States tagged seals appearing on Robben and the Commander Islands and some Soviet-tagged seals appearing on the Pribilofs.

For some years past there has been evidence of overcrowding conditions on the main Pribilof Islands breeding grounds and as a corrective measure, with the Commission's approval, the United States has included in its commercial take specified numbers of surplus female seals. It was noted that in spite of this female kill, together with the loss occurring through natural causes, the number of females is estimated to be larger than the level calculated to be necessary for optimum production.

Research at sea in 1962 will again begin in February and will generally be along the lines mentioned above. On land the scientists will, among other matters, give attention to the numbers of seals returning to the breeding grounds, natural mortality rates, reproduction, and behaviour of the various segments of the herds.

The Commission noted the high degree of co-operation that has emerged, and is being continued, among the scientists of the four countries.

The United States Commissioner Ralph C. Baker was elected Chairman of the Commission, to serve through the next Annual Meeting and George R. Clark, the Canadian Commissioner, was elected Vice-Chairman.

The next Annual Meeting of the Commission will be held in Washington, D. C., November 26, 1962. The Standing Scientific Committee will meet for three days prior to that date to consider the results of the year's investigations and its report to the Commission.

Note: See Commercial Fisheries Review, March 1962 p. 32.

FOOD AND AGRICULTURE ORGANIZATION**SITE SELECTED FOR WORLD TUNA CONGRESS IN 1962:**

The Art Center in La Jolla, Calif., has been selected as the site for the World Scientific Meeting on the Biology of Tuna and Related Species, scheduled for July 2-14, 1962. The meeting is sponsored by the Food and Agriculture Organization of the United Nations. It is being held in the United States at the invitation of the United States Govern-

International (Contd.):

ment and with the cooperation of the State of California and Scripps Institution of Oceanography.

Southern California, center of the important United States tuna fishing industry, is a natural location for the meeting. Annual landings of tuna in that area are valued at more than \$40 million at dockside.

The world tuna catch in 1960, produced by fishermen of 50 nations, amounted to about 1½ billion pounds. By 1970 it is predicted that the world demand for tuna will be double this amount. Already the fleets of the major tuna fishing nations are ranging the world's oceans in search of these valuable fishes. If the maximum catch is to be achieved and sustained in the face of increasing fishing pressure, scientific estimates of this maximum sustainable harvest must be made as quickly as possible. The World Tuna Congress will review the status of knowledge and recommend programs of research, development, and management.

The meeting has attracted wide attention among fishery scientists and tuna industry people. Wide attendance from the United States and foreign countries is expected.

Note: See Commercial Fisheries Review, December 1961 p. 61.

INTERNATIONAL NORTHWEST PACIFIC FISHERIES COMMISSION**SIXTH ANNUAL MEETING:**

A 19-man delegation represented Japan at the Sixth Annual Meeting of the Northwest Pacific Fisheries Commission (Japan-U. S. S. R.) which convened in Moscow on February 26, 1962. Nine members of the Japanese fisheries delegation departed Tokyo February 22. The delegation was headed by Iwao Fujita, Vice President of Japan Fisheries Association, and also chairman of this sixth annual meeting of the Commission. He was accompanied by Commissioner Sunichi Oguchi, Chief, Production Division, Fisheries Agency, and fisheries experts and advisers. Industry advisers left Japan early in March.

Note: See Commercial Fisheries Review, March 1962 p. 32.

**WHALING****NORWEGIANS REPORT SALES OF 1961/62 SEASON'S WHALE OIL:**

According to newspaper reports, 45,000 long tons of whale oil have been sold to the largest British buyer and user at £50 (US\$140) per long ton, which is the lowest price since 1945. The sellers are: Norway 17,000 tons, Japan 20,000 tons, and the United Kingdom 7,000 tons. The Netherlands is said to have been offered the same price for 5,000 tons. (United States Embassy, Copenhagen, report of March 12, 1962.)

ATOMIC-POWERED MARINE RESEARCH VESSEL

No recommendation on the construction of an atomic-powered marine research vessel by the Organization for Economic and Cooperative Development resulted from the January 25 meeting in Le Havre, France, of a study group of experts who visited a French shipyard specializing in marine research vessels, according to a report in Berlingske Tidende, January 30, 1962. This was corroborated by the Danish member (an engineer in the nuclear reactor division of a Copenhagen firm) of the study group.

The European Nuclear Energy Agency (ENEA), OECD's cooperative atomic organization, established the study group in October 1961. According to a Danish member, the group is studying three atomic-powered projects: the marine research vessel in France, a bulk carrier in Sweden, and a tanker in the Netherlands. The group planned to visit Malmö about February 16 to discuss the atomic-powered bulk carrier. Later it was to visit the Netherlands in connection with the proposal to construct an atomic-powered tanker. (January 30, 1962, report from the Regional Fisheries Attaché, United States Embassy, Copenhagen.)

Note: See Commercial Fisheries Review, March 1962 p. 35.

**Angola****FISHING INDUSTRY TRENDS, 1961:**

The Angolan fishing industry throughout 1961 was plagued with low fish meal prices, small catches, poor organization, obsolete equipment, and a shortage of credit. Only 105,183 metric tons of fish valued at US\$2,131,014 were caught by Angola's fishing fleets during the first six months of 1961.

Angola (Contd.):

(latest figures available) compared to 152,545 tons valued at \$2,621,503 caught during the same period in 1960.

Although the quantity of exports of Angolan fishery products was considerably higher during the first three quarters of 1961 than during the same period in 1960 (table 1), their average value per ton declined from \$131.80 to \$121.31.

Table 1 - Angola's Principal Fishery Exports, January-September 1961 and 1960

Commodity	January-September			
	1961		1960	
	Quantity	Value	Quantity	Value
Fish meal	Metric Ton	US\$ 1,000	Metric Ton	US\$ 1,000
Fish oil	32,918	2,779	21,039	1,963
Dried fish	1,978	210	4,239	524
Canned fish	15,367	2,670	8,646	1,654
	1,201	590	799	435

A Government subsidy to fish meal exporters of \$5 per ton for machine-dried meal and \$10 per ton for sun-dried meal was withdrawn at the beginning of 1961, but other supports were continued throughout the year, such as a 44-percent reduction in the price of Diesel fuel for the fishing fleet and exemptions from export duties for fishery products. Some credit was also made available to the fishing industry by the Fishing Industry Aid Fund and the Bank of Angola to cover expenditures in connection with readying the fleets for the 1961 fishing season. That the situation and morale of the Angolan fishing industry remains very poor was, however, illustrated by a recent article in the Benguela newspaper which claimed that 90 percent of the industry is convinced of the "hopelessness of its struggle". (United States Consulate, Luanda, February 16, 1962.)



Australia

TUNA FISHERY TRENDS AS OF JANUARY 1962:

The 1961/62 tuna season on the New South Wales south coast was over on January 7, 1962. The following week the only tuna landed was 827 pounds at Eden. The total for the season was estimated at 1,737 short tons. This was 30 percent less than the 1960/61 catch. Continuous bad weather and recurring storms throughout the 1961/62 tuna season hampered fishing.

The South Australian season opened on January 16, 1962, when three vessels took 75 tons of tuna. About 12-14 vessels were expected to fish tuna during the season of which 5 would be from New South Wales. (Australian Fisheries Newsletter, February 1962.)



Brazil

JAPANESE FISHING VESSELS IN BRAZIL TO CHANGE TO BRAZILIAN REGISTRY:

The three large Japanese fishing companies which operate fishing bases in Brazil for whaling, trawling, and tuna fishing, reportedly faced the possible prospect of having to terminate their operations in that country following the shake-up in the Brazilian Government in the fall of 1961. The Brazilian Government has instituted strict foreign exchange regulations and has demanded that the Japanese firms abide by the law which states that one-third of the crew on foreign vessels operating out of Brazil must be Brazilian nationals, and which calls for the replacement of foreign vessel officers with Brazilian nationals. This problem is said to have been overcome under the arrangement whereby most of the Japanese fishing vessels presently operating out of Brazil will be changed to Brazilian registry.

Under this arrangement, the two Japanese firms, which jointly operate 2 whaling vessels (No. 1 and No. 2 Daishin Maru) and 4 tuna vessels out of Brazil, will switch to Brazilian registry the No. 1 Daishin Maru and 2 tuna vessels (one of 300 and the other of 320 tons gross). In addition, they will also register, under the Brazilian flag, another 99-ton tuna vessel not now a part of their Brazilian fleet. The No. 2 Daishin Maru and the 2 remaining tuna vessels will be assigned elsewhere, although the tuna vessels will continue to operate in the Atlantic Ocean.

The third Japanese firm operates 3 whaling vessels (No. 12 Fumi Maru, No. 12 Seki Maru, and No. 15 Higashi Maru), 9 trawlers, and 1 tuna vessel, out of Brazil. The firm plans to recall the whaler No. 15 Higashi Maru and the one tuna vessel, and to register under the Brazilian flag the 9 trawlers. Originally, the Japanese firm had also planned on transferring to Brazilian registry the 2 whaling vessels (No. 12 Fumi Maru and No. 12 Seki Maru). However, these two vessels are presently operating on the Arctic whaling grounds and, in their place, the Japanese firm wants to transfer two other whalers from its Kosmos whaling fleet, which it had originally purchased from Norway.

All three Japanese fishing firms are presently reported to be negotiating methods of handling payments involved in the transfer of vessel registries. (Susan Teushin, February 17 and 26, 1962.)



Burma

CANNED FISH BIDS CANCELLED:

On March 13, 1962, the Burmese Government purchasing agency offered to buy canned sardine or canned saury on international bidding. However, on March 15, the Japanese canned foods exporters received information that the bids were cancelled due to the Burmese Government's sudden issuance of instructions banning canned fish imports. But it is felt that the Burmese Government will eventually negotiate with Japan for delivery of canned sardine and canned saury in the form of reparations payments.

A South African firm reportedly underbid all other foreign firms with an offer to sell 54,000 cases of 1-lb. tall 48's¹/ for 43 shillings 8 pence (US\$6.11 per case). The Japa-
1/Type of pack not indicated but believed to be natural.

Burma (Contd.):

nese exporters are reported to have made bids of 57 shillings 6 pence (US\$8.05) for 1-lb. tall canned saury, 34 shillings 4 pence (US\$4.77) for 8-oz. tall (buffet style) saury, and 58 shillings 4 pence (US\$8.17) for 1-lb. oval sardines^{2/}. (Suisan Shimbun, March 16, 1962.)

^{2/}Japanese prices are believed to be for canned fish packed in tomato sauce.

**Canada****BRITISH COLUMBIA HERRING LANDINGS AND PRODUCTS, 1956/57-1961/62:**

Herring landings in British Columbia during the 1961/62 season were 30.4 percent greater in quantity than in the previous season. This season's fish meal production was up 27.5 percent and fish oil production was up 58.2 percent as compared with the previous season.

British Columbia Herring Landings and Products, 1961/62 Season with Comparisons							
Season Ending	Unit	Mar. 10, 1962	Mar. 18, 1961 ^{1/}	Mar. 12, 1960 ^{1/}	Mar. 14, 1959	Mar. 15, 1958 ^{1/}	Mar. 16, 1957
<u>Landings:</u>							
District No. 2:	Tons	33,254	47,088	23,239	10,980	11,286	31,004
Northern	"	39,032	43,505	10,919	40,628	14,965	36,213
Central	"	16,604	2,896	3,121	23,058	13,774	29,089
District No. 3:							
Lower East Coast	"	51,821	31,309	55,582	51,648	18,284	43,389
Middle East Coast	"	20,561	10,023	20,014	10,183	9,932	20,001
Upper East Coast	"	13,294	2,978	10,005	15,015	3,470	15,045
West Coast	"	49,595	34,142	62,273	78,122	12,624	5,202
Total Landings	"	224,161	171,941	185,153	229,634	84,335	179,943
<u>Products Produced:</u>							
Bait	Tons	575	1,619	848	1,046	2/	1,116
Meal	"	39,535	31,014	34,492	42,307	14,886	32,555
Oil	Imp. gals.	4,676,991	2,956,948	4,585,307	4,545,845	1,900,775	3,452,762

^{1/}Limited operations.

^{2/}Less than three Companies reporting.

Source: Canadian Department of Fisheries, Vancouver, B. C.

Note: See Commercial Fisheries Review, May 1961 p. 43.

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HERRING OIL TRENDS:

Canada's herring oil price at Toronto in January 1962 averaged 7.67 Canadian cents a pound. This was substantially lower than the 1961 annual average price of 8.97 cents a pound and the 1960 annual average of 8.66 cents a pound. (The annual averages are based on monthly average prices.)

Canada's fish oil consumption in 1961 more than doubled and represented more than 15 percent of the total oils used in the

manufacture of margarine and shortening. Canadian imports of fish oil during January-September 1961 increased substantially--the United States supplied over 13 million pounds and Iceland 4 million pounds. (United States Embassy, Ottawa, report of March 1, 1962.)

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NEW BRUNSWICK FISH MEAL PRICES, FEBRUARY 1962:

Fish-meal prices (60-percent protein) quoted by New Brunswick producers the latter part of February 1962 averaged about C\$126 a short ton (\$2.10 a protein unit) for both exports and domestic sales. The price in February was 5 percent higher than in January when fish meal sold at C\$120 a short ton (\$2.00 a protein unit). (United States Consul, Saint John, N. B., February 27, 1962.)

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DOGFISH LIVER SUBSIDY PROGRAM:

The Canadian Department of Fisheries on March 7, 1962, announced that the dogfish liver subsidy program on the West Coast had

been extended to allow for the take up of the remaining C\$12,000 left in the subsidy allocation for the fiscal year 1961/1962 (ending March 31). At the rate of 12 cents per pound for the livers this means that 100,000 pounds would be accepted for subsidy prior to March 31, 1962. As of March 21, a total of 55,000 pounds of livers had been delivered under this extension.

A total of C\$150,000 was earmarked by the Government to cover the subsidy program for the fiscal year ending March 31, 1962. The Department had terminated the program

Canada (Contd.):

on November 6, 1961, as it looked like all the funds available for the program had been expended. But later it was determined that C\$12,000 had not been used.

Note: See Commercial Fisheries Review, January 1962 p. 46.

**Chile****NORWEGIAN FIRM BUILDS
REDUCTION PLANT IN CHILE:**

A Bergen, Norway, firm early this year was constructing a fish reduction plant in Chile, according to the January 24 issue of Fiskaren, a Norwegian fishery trade periodical.



The factory will have a capacity of 5,000 hectoliters or 465 metric tons each 24 hours, and it is deemed a certainty that the plant will receive raw material for operations 300 days of each year. It will be equipped with Norwegian reduction machinery.

The Norwegian company's fishing vessel Senior was scheduled to leave for Chile the end of January 1962 with complete equipment to fish for anchovies. The vessel is equipped

with two dories, and each dory has a power block. The catch will be pumped from the purse seine into the vessel.

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**JOINT SOUTH AFRICAN-CHILEAN FIRM
TO BUILD FISH MEAL PLANT:**

The Chairman of a South African group of fishing companies announced in January 1962 that the investment company of the group has made a "most interesting and, we trust, profitable investment" in the Chilean fishing industry. A 50-50 arrangement had been made with a Chilean organization whereby a new company has been formed.

The firm now contemplates that a fish meal reduction plant with a capacity of 50 metric tons per hour will be built at Iquique in northern Chile. It will start operations early next year.

A fleet of nine fishing boats will be built in Chile to supply the plant with raw fish. The South African firm estimates the plant could handle 360,000 tons of fish per year if operated continuously with no off-season. On six months of operation and an 8-hour day, this intake would be reduced to about 60,000 tons.

The South African group will send technical personnel to Chile to supervise the design and construction of the plant (to be built by another South African company) and to train Chilean labor to operate it.

The South African group expects that its 1961 profit figure from its Walvis Bay cannery and fish meal plant will reach and possibly exceed that of 1960. The factory achieved its full quota of 62,500 tons of fish landed. The cannery packed over one million cartons of pilchards. (Report from United States Consulate, Cape Town, South Africa, dated January 31, 1962.)

Note: See Commercial Fisheries Review, January 1962 p. 47.

**Denmark****FISH FILLETS AND BLOCKS AND
FISHERY BYPRODUCTS EXPORTS, 1961:**

Denmark exported 1.8 million pounds (50.1 percent) more fresh and frozen fish fillets during December 1961 than in the same month of 1960. Only 354,000 pounds, mostly cod and related species, were shipped to the United States in December 1961.

Denmark (Contd.):



The fishery for plaice is the most valuable in Denmark. Many plaice are marketed alive in fish shops, but the production of fillets is increasing each year, reaching 24,000 metric tons in 1960.

In the year 1961, Denmark shipped 10.5 million pounds of frozen fish fillets and blocks to the United States, mostly cod and related species.

Almost 21.2 million pounds (42.5 percent) more fresh and frozen fillets and blocks were exported by Denmark in the year 1961 than in 1960.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Byproducts, 1961 and 1960 1/				
Product	December		Jan.-Dec.	
	1961	1960	1961	1960
..... (1,000 Lbs.)				
Edible Products:				
Fillets and blocks:				
Cod and related species	1,847	2,305	30,027	
Flounder and sole	1,886	1,742	26,008	
Herring	1,285	779	13,959	
Other	36	73	1,130	
Total	5,054	4,899	71,124	
..... (Short Tons)				
Industrial Products:				
Fish meal, solubles, & similar products	3,362	3,190	49,733	
1/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.				
2/Includes herring fillets.				

There was a drop of 2,730 short tons (58.5 percent) in Denmark's exports of fish meal, fish solubles, and other similar products in December 1961 as compared with the same month of 1960. But exports of those products for the year 1961 were 7,356 tons or 17.4 percent greater than for 1960.

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FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS, JANUARY 1962:

Denmark exported 155,000 pounds or 3.2 percent more fresh and frozen fish fillets and blocks during January 1962 than in the same month of 1961. Only 210,000 pounds,

mostly cod and related species were shipped to the United States in January 1962.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Byproducts, January 1962 1/			
Product	January		Jan.-Dec.
	1962	1961	1961
..... (1,000 Lbs.)			
Edible Products:			
Fillets and blocks:			
Cod and related species	1,847	2,305	30,027
Flounder and sole	1,886	1,742	26,008
Herring	1,285	779	13,959
Other	36	73	1,130
Total	5,054	4,899	71,124
..... (Short Tons)			
Industrial Products:			
Fish meal, solubles, & similar products	3,362	3,190	49,733
1/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.			
2/Includes herring fillets.			

Denmark's January 1962 exports of fish meal, fish solubles, and other similar products were 172 short tons or 5.4 percent greater than in the same month of 1961. The United Kingdom and West Germany were the principal buyers.

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NEW MODERN FREEZER IN SKAGEN:

One of Europe's most modern freezers was opened in Skagen, important fishing port on the northern tip of Denmark, in January 1962. Unlike most freezers and cold-storage warehouses in Denmark, it is all on one floor. Frozen products are stacked to a height of 23 feet with fork lift trucks in storage rooms, whose temperature is -22° F. About 2,200 short tons--18,000 boxes of herring--can be stored. Later modifications will permit shipment by refrigerated ships as well as refrigerated rail cars, according to the January 17 issue of *Børsen*. (Fisheries Attaché, United States Embassy, Copenhagen, February 26, 1962.)

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FISH SALTING MACHINE PATENTED:

A Danish fisheries exporter in Esbjerg, I. C. C. Dyekjaer, in February 1962 received a patent on a machine which salts fish in one-fourth the time normally required, according to the February 14 issue of *Vestkysten*, an Esbjerg daily newspaper. The first experiments with the machine began in 1957 and 1958 in the inventor's own plant in Esbjerg. Later it was tested in filleting plants at Nars-sak, Julianehaab, and Godtaab in Greenland. All have expressed satisfaction with the invention.

Denmark (Contd.):

The machine consists of a conveyer belt which transports the fresh fish fillets under a row of devices like hypodermic needles. The points of the needles pierce the fillets, injecting a saturated solution of salt brine, which immediately salts the fish. The fish are fully salted after piling only once. This takes less than eight days, as compared with 21 to 28 days normally. The new machine is expected to save space and increase productivity to a considerable degree.

Several Danish machine shops approached were unable to take over the manufacturing problem, so it was turned over to a Lubeck, West Germany, firm, a well known manufacturer of fish filleting and skinning machines. This company has the production rights and patent rights in foreign countries. The machine is expected to go into mass production soon. It is believed to be especially well suited for installation in trawlers. (Report of February 26, 1962, from the Fisheries Attaché, United States Embassy, Copenhagen.)

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ESBJERG FISHING VESSELS

MUST HAIL CATCH:

Beginning February 1, 1962, Esbjerg fishing craft were required by the Esbjerg Fisheries Association to estimate their food fish landings and report them to the harbor master not later than 3:00 p.m. of the day prior to landing. The quantity of each species must



A typical Danish fishing vessel. This vessel, built in 1960, is 52.3 gross tons, has a 248 hp. motor and its home port is Skagen.

be reported and it must not differ more than 20 percent from the actual landings, which must occur prior to 9:30 a.m. The regulation was placed in effect to aid buyers for export

and the fillet plants which also buy at other ports. It also is expected to improve working practices at the auction hall. After the first week's operation it appeared that the only failures to report were due to unawareness of the regulation or defective radiophones.

In 1961, 2,036 fishermen were registered in Esbjerg, and 534 cutters of over 5 gross tons. Esbjerg receives more landings than any other Danish port, owing to its favorable location on the North Sea on the west coast of Jutland. The 1961 landings totaled 181,000 metric tons of which 158,000 tons was industrial fish for reduction into oil and meal, for fish and fur animal food, and for ensilage. The remaining 23,000 tons was food fish sold through the auction hall. (Fisheries Attaché, United States Embassy, Copenhagen, February 26, 1962.)

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FISHERMEN TO SUPPLY
DATA ON EARNINGS:

The subcommittee established by the Fisheries Commission to look into the costs and earnings of the Danish fishing Industry has decided to send a questionnaire to 10 percent of the Danish fishermen who operate independently, in order to obtain concrete facts on their earnings. The purpose is to provide factual information for the governmental authorities to use when questions of profits or losses in the fish-producing segment of the industry arise.

At present, neither the fishermen, who claim they are losing money because of too low prices, or the governmental authorities, who point to the increased catches and record exports, are able to make a convincing case. Questionnaires will be sent to fishermen in 20 ports this year. Since the fishermen may have to obtain assistance from accountants to complete the questionnaires properly, the subcommittee is seeking, through the Fisheries Ministry, to pay 15 kroner (US\$2.18) to fishermen for each usable questionnaire. The Fisheries Ministry official in charge of the questionnaire program states that between 250 and 300 completed questionnaires were expected from the 20 fishing ports.

Care was being exercised to obtain responses from an appropriate cross-section of the fish-producing industry, including pound net and other gear operators as well as vessel owners, and from those who were making,

Denmark (Contd.):

as well as those who were losing money. The data will be for the calendar year 1962 and the questionnaires will be sent to additional ports in years to come until all have been covered. (February 26 report of the Fisheries Attaché, United States Embassy, Copenhagen.)



German Federal Republic

FISH OIL MARKET AS OF MARCH 1962:

A leading Bremen fish oil importer stated that sales of fish body oil continued to decline late in February and early March 1962. The Peruvians have maintained their fish oil price at \$115 per metric ton (5.2 U. S. cents

IMPORTS AND EXPORTS OF FISH BODY OILS, 1961:

West Germany's imports of fish body oils in 1961 were 12.3 percent less in quantity than in 1960. The drop in value for the same period was 14.3 percent because in 1961 fish oil prices declined. Two of the principal suppliers of fish body oil to West Germany are Peru and the United States. But while the United States in 1960 supplied 27.7 percent of the total imports, in 1961 it dropped to only 8.8 percent. On the other hand, whereas Peru supplied 32.4 percent of the total fish oil imports in 1960, that country's share rose to 61.8 percent in 1961.

West Germany's exports of fish body oils in 1961 were slightly greater (0.4 percent) in quantity than in 1960. But the value of the exports in 1961 was down 10.9 percent because of lower prices. Norway and Sweden are two

Table 1- West Germany's 1/ Imports and Exports of Edible Fish Body Oils, 1961 and 1960

Origin	1961				1960			
	Quantity	Value		Avg. Price	Quantity	Value		Avg. Price
	Metric Tons	Deutsche Marks 1,000	US\$ 1,000	¢/Lb.	Metric Tons	Deutsche Marks 1,000	US\$ 1,000	¢/Lb.
<u>Imports:</u>								
Total Imports	55,788	32,987	8,247	6.7	57,871	38,477	9,619	7.5
<u>Principal Suppliers:</u>								
United States	4,913	2,710	678	6.3	16,021	10,874	2,719	7.7
Peru	34,461	19,964	4,991	6.6	18,743	11,870	2,968	7.2
<u>Exports:</u>								
Total Exports	21,006	12,222	3,056	6.6	20,930	13,717	3,429	7.4
<u>Principal Buyers:</u>								
Norway	8,980	5,479	1,370	6.9	12,073	7,845	1,961	7.4
Sweden	8,594	5,046	1,262	6.7	5,506	3,891	923	7.6

1/Includes West Berlin. Data are preliminary.

a pound), c.i.f. Rotterdam, and United States oil is quoted at \$113 (5.1 U. S. cents a pound), same basis; however, very few sales are transacted at these prices.

The largest British buyer and user bought 50,000 metric tons of whale oil early this year at about £50 per long ton (6.3 U. S. cents a pound), c.i.f. Rotterdam.

Mounting pressure is exerted on oil prices by 220,000 tons of unsold whale oil. Under prevailing conditions, margarine manufacturers are unwilling to pay more than \$110 a ton (5.0 U. S. cents a pound) for Peruvian oil. (U. S. Consulate, Bremen, March 9, 1962.)

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of the principal buyers of oil from West Germany. Norway in 1961 bought 42.7 percent of Germany's exports of oil as compared to 57.7 percent in 1960; Sweden in 1961 bought 40.9 percent as compared to 26.3 percent in 1960. (March 9, 1962, report from the United States Consulate, Bremen.)

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FISH MEAL PRICES,
MARCH 7, 1962:

Prices reported at Hamburg Commodity Exchange as of March 7, 1962, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port were as follows:

German Federal Republic (Contd.):

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton 1/	US\$/Short Ton
Danish herring	72-75	Loco	765.00	173.50
South African	65-70	May-Oct. 1962	620.00	140.62
German	50-55	prompt/Mar. 1962	630.00	142.88
"	55-60	" " "	640.00	145.15
"	60-65	" " "	650.00	147.42
Peruvian	65-70	" " "	610.00	138.35
"	65-70	Apr. 1962	610.00	138.35
"	65-70	May-Dec. 1962	592.50	134.38
Angola	65-70	Mar. 1962	680.00	154.22
Icelandic herring	70-75	prompt/Mar. 1962	765.00	173.50
" cod	65-70	Mar.-Apr. 1962	747.50	169.54

1/Values converted at rate of 4.0 deutsche marks equal US\$1.

Note: "Loco" means where and as it is at the time of sales, and all subsequent expenses to be at buyer's account.

From February 2 to March 7 prices at the Hamburg Exchange showed a mixed trend. Prices for Peruvian fish meal weakened and were substantially lower early in March than a month earlier. On the other hand, prices for German, South Africa, and Angolan meal rose during that same period. (United States Consulate, Bremen, report of March 9, 1962.)



Ghana

GOVERNMENT AUTHORIZES IMPORTS OF JAPANESE PRODUCTS:

According to information received by the Japan Export Trade Promotion Agency's (JETRO) representative stationed in Ghana, the Ghanaian Government on February 23, 1962, issued licenses permitting imports from Japan during the first six months of 1962. The licenses issued cover applications received as of September 15, 1961, and apply to importation of all kinds of products from Japan.

The Ghanaian Government usually does not publicly announce the total value authorized for import but investigations show that the value of Japanese products authorized for import may total close to G£5 million (US\$14 million). Total value of Japanese imports authorized by the Ghanaian Government in 1961 is estimated at G£14 million (\$39.2 million). Imports from Japan for 1960 were valued at G£10,830,000 (\$30.3 million), 1959--G£8,580,000 (\$24 million), and 1958--G£6,780,000 (\$19 million).

The granting of import licenses by the Ghanaian Government is expected to expedite trade negotiations on Japanese canned fish

products for export to Ghana, which had been suspended since October 1961. However, since the total value of imports authorized for the 6 months period in 1962 amounts to 35 percent of the total value of imports authorized in 1961, exports of Japanese canned fish to Ghana this year are expected to be less than 40 percent of last year's total canned fish export, which amounted to between 70,000 and 100,000 cases of canned jack mackerel, canned sardine, and canned saury. It is expected that the bulk of the Japanese canned fish products to be exported to Ghana will be fish packed in tomato sauce in 5-ounce tall cans.

Prices of Japanese canned sardines were recently reduced 100 yen (US\$0.28) per case, from 2,400 yen (\$6.67) to 2,300 yen (\$6.39). Canned saury is priced at 2,220 yen (\$6.17) per case. Therefore, it is believed that negotiations to export canned saury will be very difficult in view of the price differential of only 80 yen (\$0.22) per case between canned sardine and canned saury.

Japan is expected to first export canned jack mackerel, of which there are approximately 35,000 cases in stock, at 1,950 yen (\$5.42) per case, then canned sardine, of which there are about 25,000 cases in stock. (Suisan Tsushin, February 28, 1962.)



Greece

FROZEN FISH INDUSTRY:

According to the Union of Hellenic Overseas Fishing Enterprises, Greece's total consumption of frozen fish during 1961 reached a total of 17,532 metric tons as against 12,082 tons in 1960. This considerable in-

Greece (Contd.):

crease was due to the introduction of frozen fish into the markets of the interior of the country, as a result of extensive promotion by large fishing enterprises.

A total of 7,551 tons of frozen fish was imported during 1960. But in 1961 imports totaled 4,844 tons. The decrease in imports was due to: (1) the increase in production by Greek ocean freezer-trawlers; and (2) the smaller profit in handling imported frozen fish since increased production reduced prices.

During January 1962, four Greek freezer-trawlers landed 1,430 tons of frozen fish as against December 1961 landings of 1,930 tons and January 1961 landings of 1,120 tons.

During the last part of 1961 and the first part of 1962 there was a substantial price drop in frozen fish because of the increased production by Greek freezer-trawlers operating on the fishing grounds off the northwest coast of Africa. The large Greek fishing firms operating freezer-trawlers are concerned about the drop in prices because it has resulted in the curtailment of Greek fishing expansion. (Alieia "Fishing," February 1962.)



Guatemala

SHRIMP FISHING VESSEL LICENSES BEING GRANTED:

An official of the Department of Hunting and Fishing of the Guatemalan Directorate General of Forestry states that licenses to conduct shrimp fishing operations in Guatemala are currently being granted. He added that applications for such licenses had to be prepared on official sealed paper valued at 10 cents a sheet, and that these applications had to correspond to the procedures set forth in Decree 1470 of June 23, 1961. (United States Embassy, Guatemala, report of March 9, 1962.)



Iceland

FISHERY TRENDS, MARCH 1962:

Trawler Tie-Up: The Icelandic trawler strike began March 10, 1962, as threatened. The state mediator has entered the dispute, which remains deadlocked. As of March 15 the trawlers were still tied up. The owners proposed publicly a reduction in the number of crew members and a change of watches or shifts, with 12 hours of work followed by 6 hours of rest, instead of the present 6 hours of work followed by 6 hours of rest. Most owners escaped the effects of the strike temporarily by having their vessels leave port just prior to the strike.

Aid to Trawlers: On the same day that the Government introduced a bill to aid agriculture, it also proposed an important measure to assist the trawler industry. The proposal would be financed by an existing fisheries catch guarantee fund which is supported by an export tax of 1.25 percent on the catch of the motorboats. Further financing would come from a similar export tax based on the f.o.b. value of fish exports from the trawlers. The estimated total of 35 million kronur (US\$813,000) per year would be increased by a 50-percent matching payment from the Icelandic Treasury. A particular feature of the bill is payment of 60 million kronur (\$1.4 million) to the Icelandic trawlers for their operations in 1960 and 1961, or 1.5 million kronur (\$34,800) per trawler for the two-year period.

The critical trawler question has been hotly debated. Shortly after this bill was placed before the Althing, the Minister of Fisheries commented that the trawlers will not be permitted to operate within Iceland's 12-mile fishing limit. The new bill is designed to compensate them for part of their losses sustained as a result of being excluded from those protected waters. Like the bill on reorganization of the agricultural funds, this one attempts to meet an emergency deficit situation with a minimum of immediate impact on the Treasury.

Frozen Fish Sales to U.S.S.R.: On March 9, the Icelandic press announced signature of a trade protocol by representatives of the Soviet and Icelandic Governments calling for sale of 18,000 metric tons of frozen fish fillets to the U.S.S.R. in 1962. Of that total, 13,000 tons will be cod and 5,000 tons ocean perch, with some substitutions permitted of

Iceland (Contd.):

haddock, coalfish or pollock, and catfish.
(United States Embassy, Reykjavik, report of March 15, 1962.)

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UTILIZATION OF FISHERY LANDINGS,
JANUARY-NOVEMBER 1961:

How Utilized	1961 .(Metric Tons) . . .	1960
Herring^{1/} for:		
Oil and meal	194,636	98,758
Freezing	16,524	6,914
Salting	63,450	20,882
Fresh on ice	4,582	998
Canning	114	-
Groundfish^{2/} for:		
Fresh on ice landed abroad . . .	28,947	23,852
Freezing and filleting	138,561	193,479
Salting	67,174	73,019
Stockfish	46,048	54,868
Home consumption	7,734	8,074
Oil and meal	3,610	6,418
Shellfish for:		
Freezing: Lobster	1,490	1,870
Shrimp	932	-
Canning (shrimp)	249	-
Total production	574,351	489,132

^{1/}Whole fish.^{2/}Drawn fish.

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PROJECT FOR COMMON MARKET
FISH PLANT DROPPED:

On January 14, the press announced that the Freezing Plants Corporation had dropped its long-standing plan to build a fish distribution and processing plant for the EEC area in Holland (the European Economic Community or Common Market area in the Netherlands). The Export-Import Bank had already approved a loan of \$250,000 for the project. (United States Embassy, Reykjavik, January 18, 1962.)



India

UNITED STATES COLLABORATION
SOUGHT FOR NEW FISH
AND SHRIMP PROJECT:

Financial and technical collaboration was being sought in March 1962 by a fisheries cooperative association of Ahmadabad, India, for a commercial fisheries project it plans to establish at Okha Port on the Saurashtra coast of Gujarat State, India. The project envisages the employment of five medium mechanized vessels to exploit the shrimp resources of the Gulf of Kutch and two trawlers to carry on offshore fishing in the Arabian Sea. In addition, two transport launches are proposed to be bought to bring fish landed in the adjoining fish harbors by other fishermen.



The project will, moreover, include the establishment of fish canning, quick freezing, cold-storage, and fish meal plants. Besides exploiting the domestic markets in the principal cities such as Bombay and Delhi, efforts will also be directed to export processed fish to the United States, Germany, and other foreign countries.

It is estimated that the project will need an investment of Rs.3,200,000 (US\$672,000) of which the equivalent of Rs.1,568,000 (\$329,280) or approximately 49 percent will be required in foreign exchange for the purchase of trawlers, marine engines, and machinery for the canning, freezing, storage, and fish meal plants. The association has proposed that this foreign exchange component be provided by the American investor. In return, he will be allotted an equivalent share in the equity capital of a new company which will be organized to undertake the project. The rupee investment, estimated at Rs.1,632,000 (\$342,720) will be raised by the association.

The American investor will also be expected to assist in obtaining the services of a fishery engineer, two masters for the trawlers, and a fishery technologist. He will be, furthermore, given the franchise for sales in the United States.

The association's paid-in capitalization is Rs.600,000 (\$126,000) of which Rs.450,000 (\$95,000) has been subscribed by the Government of Gujarat. The balance has been contributed by fishermen cooperatives and individual fishermen. The association is mainly a marketing organization but deals also in fishermen's supplies. It claims to handle nearly 28 percent of the fish caught in Gujarat State.

Except for one joint Indo-Japanese enterprise in Bombay City, there are no other commercial fishing ventures

India (Contd.):

on the Maharashtra and Gujarat coasts. The Gulf of Kutch is believed to offer considerable scope for shrimp fishing. The association is said to be one of the largest fishermen's cooperatives in India. (United States Consulate, Bombay, report of March 15, 1962.)



Italy

FISHING INDUSTRY ASSOCIATION APPROVES EUROPECHE CHARTER:

The Executive Committee of FEDERPESCA (National Federation of Fishermen and Fishing Companies) approved the Statute of EUROPECHE (European Federation of Fishing Enterprises) on February 27, 1962. It was expected to be ratified by the Executive Committee of EUROPECHE at the end of March. The headquarters of EUROPECHE is to be in Brussels. EUROPECHE, which is composed of national fishery organizations, will seek to bring about agreement on common fishery problems within the Common Market or EEC and to keep the organs of the EEC informed about the points of view of national fishery organizations.

FEDERPESCA also decided to prepare a memorandum asking the Italian Government for relief from fiscal burdens and for financial assistance to the industry, and urging the Government to support the "Blue Plan," which involves industrialization of the fishing industry, development of cooperatives, and expansion of Italian fishing into the Atlantic. (United States Embassy, Rome, March 9, 1962, report.)



Ivory Coast

JOINT JAPANESE-ITALIAN TUNA BASE PLANNED:

A large Japanese fishing company and an Italian firm (with offices in Milan) are planning to establish a joint fishing base at Abidjan, Ivory Coast. An application has been submitted for approval of the venture to the Ivory Coast Government. Upon receiving approval from the Government, the Japanese firm will proceed to work out details of the proposed undertaking.

Under this plan, the Japanese firm and the Italian firm will jointly establish a cor-

poration with a capital of US\$320,000, each company contributing 50 percent. The Japanese firm reportedly will invest two 39-ton tuna vessels, valued at \$160,000, and will also export two other tuna vessels to the joint corporation. Annual tuna landings at the new base are expected to total approximately 2,400 metric tons of albacore and yellowfin tuna, which will be sold to the French freezer company located in Abidjan, which will then ship the tuna to France.

The Japanese firm has received approval of the Japanese Investment Liaison Council for this undertaking and plans to work out details as soon as the Ivory Coast Government permits sale of securities. (Shin Suisan Shim bun Sokuho, March 28, 1962.)

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TUNA FREEZING AND STORAGE PLANT READY FOR OPERATION:

A new tuna freezing and storage plant at Abidjan, Ivory Coast, early in March 1962 was ready for operation. Construction was started in September 1961. The plant was built by a large United States west coast tuna canning firm.

The main building consists of a room containing freezing brine tanks, a cold-storage room measuring 80 x 100 ft., the necessary compressors in an adjacent room, and two ice-making machines on the roof. Outlying structures will include a T-shaped wharf, an office building (completed), a warehouse (under construction), and a diesel oil storage tank (was expected to be started in mid-March). The plant will employ approximately 50 men on a permanent basis and 20 to 30 "casuals" for stevedoring. The operation will be similar to the same firm's wholly owned tuna freezing and storage plant in Freetown, Sierra Leone.

Fish will be received from various Japanese, Spanish, and French vessels operating off the coast of West Africa, which will dock at the inner part of the wharf. The fish will be unloaded into the freezing brine tanks and then segregated and stored by species (skipjack, big-eyed, and other varieties of tuna and swordfish) in the storage room. Refrigerated carrier ships (primarily from Hamburg, Germany) will dock at the outer wharf and will pick up cargoes of frozen tuna for Italy, Puerto Rico, and the United States.

The plant is owned by the Societe Generale Industrielle de la Peche (SOGIP). Fifty percent of the firm's stock is held by the United States cannery firm and 50 percent by a Milan, Italy, firm which is affiliated with the Discount Bank of Israel, a Swiss bank.

Another related enterprise is the Societe Ivoirienne de la Peche (SOIP), which is owned 50 percent by the Milan firm and 50 percent by a Japanese fishing firm. At the moment SOIP owns four vessels operating out of Abidjan, but considerable expansion is anticipated. A third company envisaged for the future will be owned jointly by the Milan firm and Societe d'Equipment pour l'Afrique (SEA) and will undertake canning and distribution of the fish in the Ivory Coast and nearby countries. This project, however, is not expected to begin operations for several years. (United States Embassy, Abidjan, report of March 13, 1962.)



Japan**1962 QUOTAS FOR FROZEN TUNA EXPORTS TO UNITED STATES SET:**

The Board of Directors of the Japan Export Frozen Tuna Producers Association held a meeting on March 8, 1962, and adopted the proposals it had drafted at its February 21 meeting on 1962 frozen tuna exports to the United States, according to a translation from the Japanese periodical Suisan Tsushin of March 8-10, 1962. Adoption of these proposals means that the following export production quotas will be in effect in 1962 (April 1, 1962-March 31, 1963):

Frozen tuna exports to United States from Japan proper: (1) Frozen albacore tuna quota - 30,000 short tons; (2) frozen yellowfin tuna quota - 35,000 short tons; (3) tuna loin quota - 5,000 short tons.

Atlantic Ocean transshipments: Fishing vessels delivering their catches for transshipment to the United States will be limited to an aggregate total of 120 fishing trips. Number of trips each fishing vessel can make will depend on its cargo-carrying capacity.

At the February 21 meeting, a special adjustment quota of 5,000 tons was proposed and the use of the special quota was to be clarified at the March 8 meeting. Two days prior to this meeting, on March 6, the committee assigned to study this problem was unable to resolve differences regarding use of the special quota. Some segments of the tuna industry wanted to apply half of the 5,000 tons for transshipments from the Indian Ocean and half for direct exports from Japan proper, while others wanted to apply all of it for transshipments from the Indian Ocean. Responsibility of determining allocation of this proposed special 5,000-ton quota was then turned over to a special committee.

At the March 8 meeting, the Board of Directors of the Producers Association adopted the proposal of this special committee. Briefly, this proposal calls for a transshipment quota of 4,000 short tons for the Indian Ocean, with shipments from the Indian Ocean exceeding this amount to apply to the quota covering direct exports to the United States from Japan proper. Fishing vessels operating in the Indian Ocean delivering their catches at a specified base for transshipment to the United States are to be limited to one trip, or the equivalent of 150 tons of frozen tuna. Of the 4,000-ton quota, the Association's Board of Directors will control use of 1,500 tons and determine when they can be used. Furthermore, the Association agreed not to grant increases in the Indian Ocean transshipment quota for 1962.

Approval of transshipments from the Indian Ocean eliminates the long return trip to Japan which fishing vessels had to make and it is estimated that the cost of frozen tuna for export to the United States will be reduced \$10 to \$15 per short ton.

Considerable speculation is now going on within the Japanese tuna industry as to which port in Southeast Asia will be designated as port of transshipment. Penang is said to be most suitable. The joint Malayan-Japanese cannery enterprise located at Penang presently operates a 200-ton capacity cold-storage plant. However, there is the problem as to whether the firms intimately connected with the Japanese company, which operates the joint company in Penang, would permit other exporters to utilize facilities at Penang. Also, these firms are reported to have established priority on available space on regularly scheduled freight vessels calling at Penang.

Facilities at the port of Singapore are considered to be inadequate. For one thing, the cold-storage plant is located far away from the docks, besides being very small. It is likely that ports in Sumatra and Ceylon may be considered. Until such time that a port of transshipment is designated, a scramble among exporters in selecting a port can be anticipated.

Note: See Commercial Fisheries Review, March 1962 p. 42.

EXPORTERS ASSOCIATION PROPOSES OVER-ALL FROZEN TUNA EXPORT QUOTA TO UNITED STATES:

The Board of Directors of the Japan-Frozen Foods Exporters Association met on March 8, 1962, and proposed the following quotas of frozen tuna and frozen swordfish for export to the United States in 1962 (April 1962-March 1963):

1. Frozen tuna export quota shall be 110,000 short tons. This quota shall be allocated to exporters with established records for the period April 1958 to March 1961 inclusive.

2. Frozen tuna loin export quota shall be 5,000 short tons. Of this quota, 4,500 tons shall be allocated to exporters with established records for the period of April 1959 to March 1962 inclusive; 450 tons shall be set aside for adjustment purposes, and 30 tons held in reserve.

3. Frozen swordfish export quota shall be 6,500 short tons.

The proposals were to be submitted for approval to the special general meeting of the Exporters Association scheduled for March 19. (Translated from Japanese periodical Suisan Tsushin, March 9, 1962.)

Editor's Note: The basic difference between the export quotas proposed by the Producers Association and the Exporters Association for allocation to their respective association members is that the Exporters Association has one over-all export target, without limiting exports of any one species of tuna. In other words, exporters are willing to accept from producers any species of tuna available for export.

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FROZEN TUNA OCEAN FREIGHT RATE TO UNITED STATES REDUCED:

The Japan Frozen Foods Exporters Association has been negotiating with the Pacific Ocean Freight Conference for quite some time concerning reduction of freight rates for frozen tuna shipped to the United States. As a result, the Conference recently announced its decision to provisionally reduce frozen tuna freight rates from the present \$57.75 per short ton to \$50 per ton, to be effective for the period March 15-September 30, 1962. (Suisan Tsushin, March 16, 1962.)

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Japan (Contd.):**TUNA RESEARCH COUNCIL PROPOSES
LARGE-SCALE TUNA
RESEARCH PROGRAM:**

The Japanese National Tuna Research Council, a quasi-governmental organization established in 1961 to strengthen bonds between existing tuna organizations through government and industry cooperation and to promote tuna research and tuna technology, held its second meeting on February 28, 1962. Members of the three technical departments of the Council—biological research, gear research, and technology—met jointly for the first time at this meeting. The following research programs were adopted by the three departments:

Biological Research: (1) Changes in tuna fishing conditions in the Indian Ocean and the Pacific Ocean: Data on changes in fishing conditions will be systematically collected and compiled, and yearly changes in fishing conditions in those areas will be studied. Five-year program. Cost FY 1962 (April 1962–March 1963), 300,000 yen (US\$633). (2) Yearly changes in size composition of Atlantic Ocean yellowfin and albacore tuna: Yearly changes in size composition of yellowfin and albacore tuna taken from the Atlantic Ocean will be investigated and results combined with existing data on yearly changes in hook rates. Based on this combined study, causes of yearly changes in catches and in size composition will be investigated. Continuous program. Cost FY 1962, 230,000 yen (\$639).

Technical (Gear Research) Department: (1) Development of fish scanner to study tuna ecology: A fish scanner will be developed for use in studying tuna ecology. One-year program. Cost FY 1962, 300,000 yen (US\$633).

(2) Research on driving away killer whales by sound: Reaction of killer whales to sound will be studied, and based on this, methods will be devised to study their responses with the idea of either dispersing them or attracting them so they can be captured and killed. Effect that such measures will have on other fish will be investigated. Two-year program. Cost FY 1962, 600,000 yen (\$1,667).

(3) Vertical distribution of tuna and behavior of tuna long-line gear under water as determined by means of fish scanners: Fish scanners will be used to trace behavior of tuna long-line gear under actual fishing conditions and to study vertical distribution of tuna. One-year program. Cost FY 1962, 303,750 yen (\$844).

(4) Operation of tuna long-line gear: A study will be made to improve and simplify fishing operations and to increase efficiency and prolong durability of fishing gear. Three-year program. Cost FY 1962, 200,000 yen (\$555).

(5) Development of fish scanner for use in studying tuna ecology: A basic study will be made of existing fish scanners with respect to supersonic wave output, emission frequency, wave angle, and installation, and a special scanner for tuna fishing shall be developed. Program commenced March 1962 and will end March 1963. Cost, 300,000 yen (\$633).

(6) Method of dispersing killer whales by sound: A sounding device will be tested and a practical method of driving away killer whales developed, and said method shall then be offered to the fishing industry. Program started March 1962 and will end March 1963. Cost, 300,000 yen (\$633).

Technology Department: (1) Research on tuna muscle extracts: Changes occurring in muscle extracts during processing or during decomposition will be analyzed and effect of muscle extracts on flavor and "browning" will be studied. Program to start June 1962 and end December 1964. Cost, 240,000 yen (\$667). (2) Utilization of poor quality tuna: Utilization of tuna meat of poor quality for fish sausage will be studied: Program to start June 1962 and end August 1963. Cost, 255,000 yen (\$708).

A total of ten members attended the Council meeting. They included key officials from the National Federation of Tuna Fisheries Cooperative Associations, Japan Fisheries Society, and the Fisheries Agency. They voted to grant 1,650,000 yen (\$4,600) to subsidize the research program for FY 1962. (*Suisan Keizai Shim bun*, March 3, 1962; *Shin Suisan Shim bun*, March 5, 1962.)

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**EXPORT COUNCIL ADOPTS FY 1962
EXPORT TARGETS FOR CERTAIN
FISHERY PRODUCTS:**

The Fisheries Division of the Japanese Agricultural and Marine Products Export Council met on March 23, 1962, and adopted export targets for Fiscal Year 1962 (April 1962–March 1963), according to a translation from the Japanese periodical *Suisan Tsushin* of March 24, 1962.

Commodity	Quantity		Value	
	1962 1/	1961 2/	1962 1/	1961 2/
Frozen tuna	(Metric Tons)	(US\$1,000)		
Frozen swordfish	149,000	130,780	50,110	43,510
Agar-agar	7,700	7,712	5,600	5,671
Salted fishery products	600	451	1,920	1,746
Cultured pearls	6,910	5,363	6,000	5,426
	(In Pounds)	(US\$1,000)		
	124,000	135,750	35,250	37,832
1/April 1962 to March 1963, 2/April 1961 to March 1962. Some of the figures represent estimates.				

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**CANNERS SET 1962 CANNED TUNA
IN BRINE EXPORT QUOTA:**

The Japan Export Canned Tuna Packers Association convened a special general meeting on February 27–28, 1962, and adopted the following proposals concerning canned tuna in brine for export to the United States in 1962 (April 1962–March 1963):

1. The 1962 quota of canned tuna in brine for export to the United States shall be 2,300,000 cases. Of this amount, 1,500,000 cases will be allocated to producers on the basis of their past performance records and 800,000 cases unassigned.

2. The unassigned quota of 800,000 cases will be released as follows: April–June 320,000 cases, July–December 320,000 cases, January–March 1963, 160,000 cases.

3. The total export quota of 2,300,000 cases shall consist of 60 percent canned white meat tuna and 40 percent canned light meat tuna. Exports of canned white meat

Japan (Contd.):

must not fall below 40 percent of total exports, and exports of canned light meat tuna must not exceed 60 percent of total exports.

4. The following proportions of different sizes of canned tuna in brine shall be exported:

	Percent
White meat tuna:	
No. 1 (13-oz.) 24's	20
No. 1/2 (7-oz.) 48's	55
4-lb. 6's	25
Light meat tuna:	
No. 1 (13-oz.) 24's	20
No. 1/2 (7-oz.) 48's	45
4-lb. 6's	35

The Packers Association also decided at this meeting that exports of canned tuna to the United States other than canned tuna in brine and canned tuna in oil will be permit-

ted when it is ascertained that such products will not be cleared through United States Customs under the same category as canned tuna in brine. The Association also decided to raise the check price of canned white meat tuna in oil for export to Canada by \$0.50 a case, from \$8.65 a case for No. 1/2 (7-oz.) 48's, f.o.b., Japan, to \$9.15 per case. (Suisan Tsushin, February 23, and March 1, 1962.)

of 5° N. latitude, and east of 110° W. longitude south of 5° N. latitude) is somewhat larger than some circles in Japan had anticipated. According to the Fisheries Agency, it is not possible to make a good estimate of the amount of tuna taken by Japanese vessels fishing in that area inasmuch as catch data are not complete. However, it is estimated that somewhere around 5,000 metric tons of tuna are caught by Japanese tuna long-liners, mostly vessels in the 250-ton class, fishing in the proposed regulatory area. (Translation of a news item in the Japanese periodical Suisan Keizai Shimbun, March 3, 1962.)

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1960 TUNA LANDINGS FROM PACIFIC OCEAN ESTIMATED AT 530,000 METRIC TONS:

A member of the Tokai University's Fisheries Research Laboratory, who is attempting to estimate total catch of tuna-like fish in the Pacific Ocean and Indian Ocean, calculates

Species	1960 Landings of Tuna and Tuna-like Fish from Pacific Ocean by Countries								
	Japan	U.S.	Peru ¹	Ecuador ¹	Mexico ¹	Australia ¹	Formosa ¹	Total	
(Metric Tons)									
Bluefin	16,368	5,439	-	-	-	2,250	-	24,057	
Skipjack	78,606	32,768	10,527	-	-	-	-	121,901	
Bonito	-	-	14,202	-	-	-	-	14,202	
Albacore	52,037	19,088	-	-	-	-	-	71,125	
Yellowfin	2/ 91,852	99,304	-	-	-	-	-	191,156	
Others	77,356	15,565	7,850	4,278	1,758	-	537	107,344	
Total	316,219	172,164	32,579	4,278	1,758	2,250	537	529,785	

¹/Data based on export figures and locally-consumed tuna not included.

²/Includes big-eyed tuna and spearfish.

ted when it is ascertained that such products will not be cleared through United States Customs under the same category as canned tuna in brine. The Association also decided to raise the check price of canned white meat tuna in oil for export to Canada by \$0.50 a case, from \$8.65 a case for No. 1/2 (7-oz.) 48's, f.o.b., Japan, to \$9.15 per case. (Suisan Tsushin, February 23, and March 1, 1962.)

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ESTIMATED TUNA CATCH IN EASTERN PACIFIC:

The Japanese Fisheries Agency announced on March 1, 1962, details of the bill being considered by the United States Congress to regulate the catch of yellowfin tuna in the eastern Pacific Ocean. The proposed regulatory area (east of 120° W. longitude north

that 1960 landings from the Pacific Ocean totaled approximately 530,000 metric tons and from the Indian Ocean 100,980 metric tons, which included 48,676 tons of Indian Ocean bluefin tuna.

Calculations are based on data from the Japanese Fisheries Agency, United States catch statistics, and data collected directly from Japanese fishing vessels. Indian Ocean catches include only those made by Japanese fishing vessels. Pacific Ocean landings, which were grouped by species and by country, are shown in the table. (Suisan Keizai Shimbun, March 1, 1962.)

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TUNA EX-VESSEL PRICES:

February 26, 1962: The following ex-vessel prices were paid for 210 tons of frozen tuna and tunalike fish landed in Tokyo by a Japanese tuna vessel, according to a translation of a news item in the Japanese periodical Suisan Keizai Shimbun, February 28, 1962.

Japan (Contd.):

Product	Price	
	Yen/Kg.	\$/Short Ton
Yellowfin (gilled & gutted):		
Special 1ge. (over 120 lbs.)	95	239
Large (100-120 lbs.)	114.2	288
Medium (80-100 lbs.)	123.5	311
Small (20-80 lbs.)	123.5	311
Albacore (round)	135	340
Fillets:		
Yellowfin	120.2	303
Big-eyed	108	272

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March 7, 1962: The following ex-vessel prices were paid for 568 metric tons of frozen tuna and tunalike fish, including sharks, landed in Tokyo by two Japanese tuna long-line fishing vessels, according to a translation from the Japanese periodical Suisan Keizai Shimbun of March 9, 1962.

Product	Price	
	Yen/Kg.	\$/Short Ton
Yellowfin (gilled & gutted):		
Large (over 100 pounds)	115.0	290
Med. (80-100 pounds)	123.1	310
Sm. (20-80 pounds)	123.3	311
Fillets:		
Indian bluefin	94.5	238
Yellowfin	117.8-120.6	297-304
Big-eyed	103 -106.2	260-268

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RECORD SIZE BLUEFIN TUNA
SOLD FOR \$1,000:

A large bluefin tuna landed by a Japanese long-liner fishing in the Indian Ocean is claimed to be the largest bluefin ever landed by a Japanese fishing vessel. The fish weighed 880 pounds and was sold to the "sashimi" trade for 360,000 yen (US\$1,000). (Suisan Keizai Shimbun, March 20, 1962.)

1/"Sashimi" is raw fish thinly sliced and flavored with soybean sauce. Many different types of marine fish are eaten as "sashimi," but bluefin tuna "sashimi" is considered best.

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FISHERY LANDINGS AT YAIZU:

February 1962: A total of 10,839 metric tons of fish valued at 1,035 million yen (US\$2.9 million) was landed at Yaizu (leading Japanese tuna fishing port) during February 1962, according to a translation from the Japanese periodical Suisan Keizai Shimbun of March 8, 1962. This was an increase in landings of 1,900 metric tons and in value

of 176 million yen (US\$489,000) over February 1961.

Species	Yaizu Fishery Landings, Principal Species, February 1962 with Comparisons			
	Landings		Average Ex-Vessel Price	
	1962	1961	1962	1961
Bluefin	(Metric Tons)		(US\$/Short Tons)	
Albacore	6,254	6,904	272	239
Skipjack	1,978	1,199	313	237
Mackerel	257	6	179	222
	1,592	859	78	134

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1961: Because canneries, manufacturers of fish ham and sausage, and producers of other traditional Japanese fishery products are located in Shizuoka Prefecture, the fishing port of Yaizu continued to hold its leading position. Also, Yaizu supplies fish daily to such large cities as Tokyo and Osaka. The value of landings at the Yaizu fish market in 1961 established the highest record since its establishment. According to the Yaizu Fish-

Species	Yaizu Fishery Landings in 1961 by Principal Species	
	Metric Tons	US\$1 Million
Albacore	16,518	5.3
Other tuna	63,473	18.2
Skipjack	27,326	5.9
Mackerel	8,654	1.1
Others	9,680	1.3
Total 1961	125,651	\$31.9
Total 1960	118,414	\$28.7

eries Cooperative, actual landings in 1961 were valued ex-vessel almost US\$31.8 million, surpassing substantially the previous highest record value of \$28,611,000 in 1960. This was attributed to increased tuna landings, which make up the bulk of the total landings at Yaizu. Skipjack tuna fishing in 1961 was good generally and the value of the catch was high in spite of a low price per ton. In quantity, the landings in 1961 exceeded the previous year by 7,200 metric tons. (Suisan Keizai Shimbun, January 13, 1962.)

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TREND TO ESTABLISH JOINT OVERSEAS BASES TO EXPORT FROZEN TUNA TO UNITED STATES:

The Japanese Fisheries Agency recently affirmed its intention to authorize the Japanese fisheries company, which manages the joint Japanese-Malayan tuna fishing and cannery company at Penang, to annually export up to 6,000 short tons of frozen tuna to the United States from the base at Penang. This plan, which the Japanese fisheries company has been pushing for quite some time, calls for the operation of ice-packing fishing vessels from the Penang base. Iced tuna landed by the vessels would then be frozen at shore facilities at Penang for export to the United States.

Japan (Contd.):

The Penang freezer plant reportedly has a maximum daily freezing capacity of only five tons, so its annual production of frozen tuna would not be more than 1,825 tons, even if the plant operates at full capacity every day. Therefore, fresh fish landed by the ice boats alone cannot possibly meet the annual 6,000-ton quota. Moreover, it is not likely that the vessels of about 100 tons would operate near Madagascar, where the main fishing grounds are located, because of the great distance. Thus, a strong possibility exists that this 6,000-ton quota will be filled by utilizing frozen tuna landed by clipper vessels operating out of Penang, which was recently selected as a transhipment base.

Observers feel that the Fisheries Agency cannot grant preferential treatment only to the Japanese firm operating the Penang base. If requests to export tuna to the United States should be submitted to the Agency by other firms, the Agency would also have to grant those firms permission. Thus, the Agency's recent action in authorizing the transshipment of 6,000 tons of frozen tuna to the United States from Penang can be said to have started a trend towards the establishment of joint companies overseas for the purpose of exporting frozen tuna to the United States.

The joint company at Espiritu Santo, New Hebrides, is considered typical of joint companies established for the purpose of exporting frozen tuna to the United States. This joint company is reported to be facing difficulty in contracting for ice boats to fish for it, since ex-vessel prices at Espiritu Santo, in contrast to prices at Samoa, are low. On the other hand, the Espiritu Santo base is much closer to the tuna fishing grounds than the Penang base, and so the Japanese firm operating the Penang base is expected to experience difficulty in making sufficient profit to erase its accumulated deficit by relying on catches of ice boats alone. Eventually, it will have to rely on clipper-caught tuna for export to the United States.

Should this happen, then other firms which have established joint companies overseas can be expected to utilize tuna clippers at their overseas bases. Also, if the Fisheries Agency should authorize establishment of the large tuna base planned for Levuka, Fiji Islands, and permit that base to utilize medium vessels without tuna fishing licenses, as presently proposed, then it is quite foreseeable that in the near future tuna clippers, as well as medium vessels without tuna fishing licenses, will come to be utilized at joint overseas bases. (Suisan Tsushin, March 31 & April 2, 1962.)

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PENANG AND SINGAPORE DESIGNATED AS TRANSSHIPMENT PORTS FOR INDIAN OCEAN FROZEN TUNA:

The Japan Export Frozen Tuna Producers Association on March 22, 1962, formally designated Singapore and Penang as ports of transshipments for tuna caught in the Indian Ocean, and Abidjan, Ivory Coast, as a port of transshipment for the Atlantic Ocean. Earlier, the Association had established a frozen tuna transshipment quota of 4,000 short tons for the Indian Ocean.

The Japanese Fisheries Agency is somewhat concerned over the fact that the Association had enacted regulations which permit transshipments from the Indian Ocean on an expanded scale before the Agency had even completed its opinions on this matter. The Agency had intended to permit only the Japa-

nese firm which operates the joint Malayan-Japanese tuna-canning plant at Penang to tranship Indian Ocean tuna to the United States for the purpose of putting that company back on its feet. (Suisan Tsushin, March 23, and 26, 1962.)

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SKIPJACK TUNA SURVEY IN INDIAN OCEAN REVEALS FISH ARE SMALL:

The Shizuoka Prefectural research vessel Fuji Maru (191 gross tons) which was chartered by the Japan Overseas Fisheries Cooperative Association in December 1961 to survey the Indian Ocean waters off Ceylon, Nicobar Islands, and the Maldives Islands for skipjack tuna, was scheduled to return to Japan after mid-March. According to the senior member of the vessel's survey team, who returned to Japan by plane, the Fuji Maru operated principally in the waters off the Maldives Islands except for one cruise made off Ceylon, at which time tilapia and anchovies were used in a bait-feeding experiment. Results of this test revealed anchovies to be superior to tilapia as bait.

The currents off the Maldives Islands were fast, thus making it impossible to approach close to the Islands. Skipjack seemed to congregate when tides were up but did not seem to be abundant. Fish were of comparatively small size. Skipjack taken off Ceylon averaged about 5.7 pounds each; those off the Maldives Islands about 4 pounds each.

Bait fishing was not very successful but this may have been due to the poor quality of the bait obtained locally, as well as bait carried on board the research vessel, and the fact that they had to be used sparingly. On the return trip from the Maldives Islands, 309 skipjack were taken without use of any bait.

The Maldives Islands fishing fleet consists of about 50 vessels employing hook-and-line gear, of which 15 to 25 are powered. Others use sails. Catches are exported to Ceylon but fish quality appeared poor. A cold-storage plant of about 3,500-ton capacity is located on the Islands. (Shin Suisan Shimbun Sokuhō, February 28, 1962.)

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AUSTRALIAN AND INDIAN BLUEFIN TUNA FOUND TO BE IDENTICAL:

A technician of the Nankai-ku Fisheries Research Institute in Yaizu, Japan, has veri-

Japan (Contd.):

fied that the species, one called Indian bluefin tuna and the other Australian bluefin tuna, are the same. The two "types" have been studied for three years. The data of the study will be sent to the headquarters of the Institute and eventually will be disseminated to the fishing industry.

Indian bluefin are caught in waters off the west coast of Australia and off Java, and their fishing ground was discovered in 1952. They are mostly large fish weighing 88-221 pounds each. The fish called Australian tuna were discovered in 1956 and caught on fishing grounds off the east coast of Australia. The fish were small, weighing 22-88 pounds each, but the meat is of higher quality than that of the Indian tuna. In spite of the fact that they are segregated as Indian tuna and Australian tuna, depending upon where they are caught, their appearance is almost identical.

The technician began his study in November 1960 in order to determine whether the two types of bluefin tuna are the same. Specimens of each type measuring 4 feet 2 inches, 4 feet 9 inches, and 5 feet 5 inches were selected from landings at Yaizu and the following measurements obtained: (a) the length of the head, (b) length from the tip of the mouth to the first dorsal, (c) length from the tip of the mouth to the second dorsal, (d) length from the tip of the mouth to the pelvic, (e) length from the tip of the mouth to the end of caudal, (f) the length of the pelvic, and (g) the size of the eye. For three years a total of 720 fish, 120 of each size and kind, were compared. The maximum difference found was very small when the same body lengths were compared.

In the past, yellowfin and albacore were checked by the same method and it was found that there was only one species of yellowfin and one species of albacore tuna.

As a result of the study, it has been established, almost without a doubt, that the same kind of bluefin tuna are found in the western part of the Indian Ocean and waters east of Australia as off the southern coast of Australia. Judging from the size and the quality of meat, the fish that are young and having meat of good quality migrate to the sea area off the east coast of Australia round its southern coast. As the fish grow, they re-

turn to the sea area off the Indian Ocean side where water temperatures are higher. Also, when they grow old enough to spawn, they are believed to move to the waters off Java where water temperatures are even higher and abundant plankton is available.

The technician commented that the similarity of Indian tuna and Australian tuna has always been suspected and the study has finally confirmed this theory. If the fish are definitely found to be migrating from the southern coast of Australia, it is possible that fishing grounds may be formed in that sea area also and catches on the east side of Australia may possibly affect fishing in the waters off the Indian Ocean side of the Continent. (Translation from a February 16, 1962, Japanese periodical.)

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TUNA FLEET:

Data compiled by the Japanese Fisheries Agency on tuna vessels licensed as of December 31, 1961, reveal that a total of 1,301 vessels were licensed to engage in tuna fishing. Classified by types of vessels, they include 409 medium vessels between 40-100 tons gross, 621 distant-water vessels over 100 tons gross, 6 portable-vessel-carrying motherships, 215 vessels engaged in tuna fishing on a part-time basis, and 50 vessels diverted from the salmon fishery.

As of March 1962, there was a total of 17 portable-vessel-carrying motherships (an increase of 11 vessels of that type), 621 distant-water vessels (which is the maximum allowed for that category), and 396 medium vessels.

Extension of fishing grounds to distant waters and the economic advantages of constructing larger vessels have brought about a decline in the number of medium vessels. This trend is evident because the number of medium vessels engaged in tuna fishing, as per the latest data, has declined by 226 vessels from 1957 and by 112 from 1960. (Suisan Keizai Shimbun, April 1, 1962.)

Editor's Note: Vessels under 40 tons gross do not require fishing licenses.

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FISHING COOPERATIVE FORMED FOR FIJI ISLANDS TUNA BASE:

The South Pacific Ocean Fisheries Cooperative, which is to manage the joint Anglo-

Japan (Contd.):

Japanese fishing base at Levuka, Fiji Islands, upon its establishment, held its inaugural meeting on March 12, 1962, in Japan and elected officers.

The Cooperative, which presently consists of 25 members, was provisionally organized to lay the groundwork for the Fiji Islands fishing base. The Cooperative plans to apply for permission to form into a legal corporation under the Fisheries Cooperative Law in or about December of this year. It had originally planned on commencing base fishing operations in February 1963. However, commencement of operations is expected to be postponed owing to the delay in applying for incorporation. (Suisan Keizai Shimbun, March 13, 1962.)

FISHERIES AGENCY'S POSITION ON OVERSEAS CANNERIES:

The Chief, Fisheries Section, Japanese Fisheries Agency, at a board meeting of the Japan Canned Tuna Packers Association explained the Agency's attitude on developments involving the joint Japanese-Malayan tuna-canning company established at Penang, Malaya. That firm has been given special permission to export canned tuna in brine to the United States, and it is also seeking to export frozen tuna directly to the United States.

The Fisheries Chief stated that the Japanese firm which owns the Malayan Marine Industries would like to see its Malayan firm engage primarily in exporting frozen tuna to the United States, and secondarily engage in the production of canned tuna. Other large fishing companies have stated that they would like to establish tuna canneries overseas but the Fisheries Agency's policy is not to approve such construction, and the Agency has had all large fishing companies pledge they will not construct tuna-canning facilities overseas. A joint tuna-fishing enterprise is being planned for the South Pacific, but the Agency does not intend to approve this enterprise if it is to include a canning plant.

The Fisheries Agency is presently consolidating ideas concerning tuna exports. A rough draft concerning this subject has already been completed. Although it cannot yet be made public, in essence, it is a plan which seeks to increase tuna exports, and,

very likely, efforts will be made to seek the lowering of United States tariffs on imports of canned tuna. Also, measures are now being studied concerning high ex-vessel prices paid for tuna landed in Japan in relation to tuna landed at foreign ports by Japanese fishing vessels, thus putting a squeeze on Japanese canners. (Suisan Tsushin, March 2, 1962.)

LARGE STERN TRAWLER EN ROUTE TO ATLANTIC:

The Japanese stern trawler Unzen Maru (2,525 gross tons) left Japan for the Atlantic Ocean trawl fishing grounds off the northwest coast of Africa on March 13, 1962. The trawler, which was completed in February 1962, has a complement of 53 men. (Nippon Suisan Shimbun, March 19, 1962.)

FISHING FIRM HOPES TO OPERATE MOTHERSHIP-TYPE TRAWLER FLEET IN ATLANTIC:

A Japanese fishing company hopes to send a bottomfish mothership trawler fleet to the Atlantic Ocean off West Africa and in February 1962 was sounding out the Fisheries Agency's view on the matter. If the Agency should grant approval, the firm plans to undertake preparations in May 1962 to dispatch the Awazu Maru (8,000 gross tons) and 6 trawlers of the 80-ton class to the West African waters. (Nippon Suisan Shimbun, February 23, 1962.)

TWELVE TRAWLERS REPORTED IN ATLANTIC OCEAN:

As of the end of February 1962, Japanese trawlers were operating in two areas in the Atlantic Ocean, off the coast of northwest Africa in the vicinity of the Canary Islands and off the coast of South Africa.

Reports indicated that a total of 10 Japanese trawlers were operating off the West African Coast. The bottom fish grounds off the South African coast were being fished by two trawlers of one Japanese firm only--the No. 56 Taiyo Maru (744 gross tons) and the No. 62 Taiyo Maru (1,481 gross tons). But they were to be joined by the No. 61 Taiyo Maru (489 gross tons) which in February 1962 was fishing in New Zealand waters. (Nippon Suisan Shimbun, February 26, 1962.)

Japan (Contd.):**SAUDI ARABIA AND LEBANON SEEK JOINT FISHING VENTURE WITH JAPAN:**

The Japanese Overseas Fisheries Cooperative Association held a meeting on March 20, 1962, to report on the results of fishery surveys it had recently conducted in Lebanon and Saudi Arabia. According to the Association, both Saudi Arabia and Lebanon are seeking Japanese cooperation in developing their fishing industry.

A Saudi Arabian firm wants to establish jointly with Japan, a cannery, freezer, cold-storage, an ice-making plant, and a fish-meal plant, and is seeking offers from Japan.

Lebanon is also seeking Japanese assistance in developing its fishing industry and is hoping that Japan would conduct trial fishing operations off the coast of Lebanon.

The Association plans to contact its members to promote these ventures and also plans to recommend fishery promotional measures to the Saudi Arabian Government on the basis of its recent survey, which was conducted during February 10-March 12, 1962, and financed by the Japanese Ministry of International Trade and Industry. (Suisan Keizai Shimbun, March 21, 1962.)

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NORTH PACIFIC 1962 SALMON FISHERY PLANS:

The Japanese Fisheries Agency announced late in March that Japan plans to table at the current Japan-U. S. S. R. fisheries negotiations at Moscow a document proposing a voluntary curtailment of Japan's salmon fishing effort in the North Pacific for 1962, according to a report from Tokyo. The proposal calls for a 10-percent retrenchment of the 1961 salmon catcher boat fleet which operated north of 45° N. latitude and a 20-percent cutback for vessels of the land-based fleet which fished south of 45° N. Under the plan 133 boats would be eliminated from the 1962 salmon fisheries.

Considerable opposition to the plan is being voiced by the catcher boat operators. However, the North Pacific Mothership Fisheries Council has notified the Fisheries Agency of its decision to eliminate one mothership from its fleet of 12 which operated in 1961.

The Sixth Annual Meeting of the Northwest Pacific Fisheries Commission (Japan-U. S. S. R.) convened in Moscow on February 26, 1962, and as of March 23 was still in session. (United States Embassy, Tokyo, March 23, 1962.)

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ASSIGNMENT OF SALMON VESSELS TO TUNA FISHING PROPOSED:

The Japanese Fisheries Agency Director on March 7, 1962, submitted a request to the salmon industry requesting cooperation in reducing operations of the salmon mothership fleet and the Eastern Hokkaido land-based fleet. Specifically, he recommended that the number of catcher vessels assigned to the salmon motherships be reduced by 10 percent from last year's 410 vessels and the land-based Eastern Hokkaido fleet operating south of 45° N. by 20 percent from last year's 414 vessels.

Fishing vessels removed from the salmon fishery are expected to be allowed to engage in tuna fishing or bottom fishing and fall king crab fishing in the Eastern Bering Sea. Press reports indicate that the National Federation of Tuna Fishing Cooperative Associations strongly objects to this proposal. The Federation contends that the Fisheries Agency always seems to be assigning fishing vessels displaced from some other fishery to the tuna fishery, which is becoming highly competitive, and is concerned over this trend.

Speculation is going on in Japan regarding the possibility that some of the 122 salmon vessels which most likely will be retired from the salmon fishery, despite the salmon industry's objection, may sign up to participate in Japanese plans to establish a large tuna fishing base at Levuka, Fiji Islands. The salmon vessels are less than 100 tons gross and fall within the range of medium tuna vessels (40-100 tons). The tuna base proposed for Levuka calls for the utilization of 65-ton vessels.

Interest in tuna fishing developments in the South Pacific is growing and this interest is heightened by reports that Japanese firms which have agreements to deliver tuna to Samoa and to Espiritu Santo, New Hebrides, have requested the Fisheries Agency that their quotas be increased. (Translated from the Japanese periodicals Suisan Shimbun

Japan (Contd.):

Sokuho, March 19; Suisan Keizai Shimbun, March 17, 1962; and other sources.)

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CHANGES RECOMMENDED IN FISHING VESSEL CONSTRUCTION SUBSIDY PROGRAM:

The Japanese Agriculture and Forestry Ministry has negotiated with the Finance Ministry concerning revision of the fishing vessel construction loan program. The Agriculture and Fisheries Loan Corporation, a Government agency, has undertaken a study of loan procedures for the fiscal year which began April 1, 1962, and was expected to present the following recommendations to the Fisheries Agency.

1. Increase vessel construction loans to 70 percent of total construction cost. Present limit, 60 percent.
2. Establish a maximum construction loan of 80 million yen (US\$222,000). Present limit, 60 million yen (US\$167,000).
3. Increase to a maximum of 2,000 tons the total tonnage that a vessel owner can own in order to qualify for a loan. Present limit, 1,000 tons; in exceptional cases 1,500 tons.

Purpose of relaxing the loan requirements is to enable fishing vessel owners to construct larger steel vessels and thus improve their economic base. The Agriculture and Forestry Ministry hoped to implement this new regulation from April 1, if negotiations with the Finance Ministry proceeded favorably. However, past experiences involving such negotiations indicate that a final settlement will not likely be reached until July or August this year. (Suisan Keizai Shimbun, March 6, 1962.)

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FISH HAM AND SAUSAGE QUALITY STANDARDS:

The Japanese Agriculture and Forestry Ministry early this year adopted quality standards for fish sausage and fish ham in accordance with the Agriculture and Forestry Products Standards Law. They became effective on March 1, 1962. Based on the standards, fish ham and fish sausage will be graded and assigned scores according to col-

or, flavor, and texture, according to a translation from the Japanese periodical Suisan Keizai Shimbun, February 25, 1962.

Fish Ham: Definition: Fish meat (including whale meat and meat of aquatic animals other than fish) seasoned with salt, or a mixture consisting primarily of fish meat mixed with pork, beef, horse meat, mutton, rabbit meat, or poultry meat seasoned with salt, and combined with binding meat (consisting primarily of ground fish meat, to which have been added additives such as oil, flavoring, and starch to give it binding strength), and packed in a casing, then sealed and steamed.

Fish Sausage: Definition: Ground fish meat or a mixture consisting primarily of ground fish mixed with ground pork, beef, mutton, horse meat, rabbit, or poultry, to which have been added additives such as oil, seasoning, and starch for binding strength, packed in a casing and sealed, then steamed or boiled. Contents may be smoked before packing in casing.

Standards: Quality will be graded on a point system for appearance, flavor, and texture. Average score must be higher than 3.0 points and for each category a score higher than 1 point must be scored.

1. Appearance:
 - a. Contents must not be deformed.
 - b. Seal must be perfect.
 - c. Contents must not be damaged.
 - d. Separation must not occur between casing and content.
 - e. Contents must not be pressed into sealed portion of casing.
2. Starch content: Must be less than 9 percent for fish ham and less than 10 percent for fish sausage.
3. Other substances: There must be none.
4. Net weight: Net weight must correspond with weight indicated on package.
5. Label:
 - a. Packing date must be clearly indicated.
 - b. Names and addresses of manufacturer and distributor must be shown.
 - c. Words and pictures must correctly describe contents and must not convey misleading impression.

Japan (Contd.):

Grading Method: Fish ham and fish sausage will be graded as follows:

COLOR SCORE:

4 to 5 points	- Contents are appropriately colored; pigments in the meat used for binding purposes are not noticeable; color of casing has not discolored contents.
3 points	- Coloring of contents generally acceptable; pigments in binding meat almost unnoticeable; color of casing has not noticeably discolored contents.
2 points	- Contents excessively colored; pigments in binding meat slightly discolored and noticeable; color of casing has noticeably discolored contents.
1 point	- Contents considerably discolored; color of casing has deeply penetrated contents.

FLAVOR SCORE:

4 to 5 points	- Contents have no peculiar odor and are deliciously flavored and seasoned.
3 points	- Contents have no peculiar odor; flavor and seasoning generally satisfactory.
2 points	- Contents have slightly raw or slightly scorched odor; flavor and seasoning somewhat inadequate.
1 point	- Contents have strong peculiar odor and have markedly low flavor.

TEXTURE SCORE:

4 to 5 points	- Contents have consistency and resilience; texture smooth; no oil or liquid separation; no air spaces in contents.
3 points	- Contents have consistency and resilience; texture fairly smooth; practically no oil or liquid separation; small air spaces in contents.
2 points	- Contents lack consistency and resilience; texture less smooth; certain amount of oil and liquid separation has occurred; contents con-

THREE FIRMS TO JOINTLY ESTABLISH FISH NET PLANT IN AFRICA:

Three Japanese firms were reported in March 1962 to have concluded arrangements with an Indian firm in east Africa to establish a joint fish-net manufacturing plant. For quite some time one of the three firms had been seeking such an arrangement through negotiations with the Indian firm located in Dar es Salaam, capital of Tanganyika. Discussions have now progressed to the stage where the Indian firm is scheduled to shortly send a representative to Japan to work out final details and conclude a contract with the Japanese firms.

The new company will be organized with a capital of 60 million yen (US\$167,000), with two of the firms each contributing 10 million yen (US\$28,000), and the third 5 million yen (US\$14,000), and the Indian firm investing 35 million yen (US\$97,000). The plant is already equipped with 20 net-weaving machines and is mainly manufacturing gill nets. In the near future, the company plans to increase the number of net weaving machines to 60 units. (Suisan Keizai Shimbun, March 11, 1962.)

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ESTIMATED 1962 CANNED SARDINE EXPORTS:

The Japan Export Canned Sardine Packers Association early in March 1962 tentatively adopted a production quota of 1,005,000 cases of export canned sardines for FY 1962 (April 1, 1962-March 31, 1963), according to a translation from the Japanese periodical Suisan Tsushin, March 6, 1962. Export canned sardine sales during FY 1962 are expected to total 700,000 cases.

Estimated Japanese Canned Sardine Exports for FY 1962

Destination	Can and Case Sizes				Total
	1-lb. Oval 48's	8-oz. Oval 96's	5-oz. Tall 100's	8-oz. Oblong 96's	
Philippines	230	60	-	10	300
West Africa	30	50	90	-	170
Europe	40	60	-	30	130
North, Central & South America	20	-	-	-	20
Other countries	40	30	10	-	80
Total	360	200	100	40	700

(In 1,000 Cases)

tain numerous small air spaces but relatively few large air spaces.

1 point	- Contents have softened; considerable separation of oil and liquid; pack has become slimy and contents contain numerous large air spaces.
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ESTIMATED CANNED JACK MACKEREL EXPORTS FOR 1962:

The Japan Export Canned Jack Mackerel Packers Association tentatively adopted a

Japan (Contd.):



Packing and washing mackerel prior to stowing it in the hold.

production quota of 1,000,000 cases of canned jack mackerel for export in FY 1962 (April 1, 1962-March 31, 1963), according to a translation from the Japanese periodical Suisan Tushin, March 6, 1962.

Destination	Estimated Japanese Canned Jack Mackerel Exports for FY 1962									
	In Tomato Sauce					Natural				
	1-lb. Oval	8-oz. Oval	5-oz. Oval	1-lb. Tall	5-oz. Tall	1-lb. Tall	5-oz. Tall	1-lb. Tall	5-oz. Tall	Total
(In 1,000 Cases)										
Singapore & Malaya	50	30	75	55	-	-	-	-	-	210
West Africa	10	20	90	55	-	20	-	-	-	140
Near & Middle East	-	20	-	-	-	-	-	-	-	20
Ceylon	-	-	-	-	-	15	15	15	-	30
Indonesia	10	15	-	-	-	-	-	-	-	25
Borneo	5	5	10	5	-	-	-	-	-	25
New Guinea	10	-	-	-	-	-	10	-	-	20
Others	15	10	5	5	5	5	5	5	-	45
Total	100	100	180	65	40	30	515	-	-	

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STATUS OF VOLUNTARY EXPORT CONTROLS TO WESTERN HEMISPHERE:

The status as of December 26 of Japanese voluntary export controls (i.e. quotas, check

prices) applicable to commodity shipments, excepting cotton textiles, to the United States and the Western Hemisphere became available the latter part of 1962.

The information on the commodities affected by voluntary Japanese export controls was obtained from the Ministry of International Trade and Industry (MITI), industry, and export association sources. After consolidation, it was finally checked with the MITI export section. Only those commodities were included on which the existing export controls appeared to be primarily for the purpose of maintaining orderly marketing abroad.

Presently, Japanese exports are controlled under two basic authorities: the Export Trade Control Order (Cabinet Order No. 378 of December 1, 1949) and the Export and Import Transactions Law (Law No. 299 of August 5, 1952) with its implementing regulations. Both require that certain listed commodities receive MITI validations for export. Many of these items receive automatic validation or are not otherwise controlled for the specific purpose of avoiding unfair export practices. These have not been considered here.

MITI has classified the commodities under voluntary export control into two general categories: (a) government imposed "voluntary" export controls and (b) voluntary agreements among exporters or within trade associations to control exports, which are not required by law or government regulation and are subject only to general government approval. MITI validation is required for all shipments of commodities falling under the first category and this is usually accomplished by the submission of validation requests through exporters' associations. However, there appears to be no hard and fast procedural rule

Status of Japan's Voluntary Minimum Price and Export Quotas Controls on Commodities
Destined for Western Hemisphere Countries, December 1961

Commodity	Designated Administering Organization	Destination	Nature of Controls	Remarks (See Footnotes)
Marine Products:				
Albacore, frozen	Japan Frozen Foods Exporters' Ass'n	United States and Canada	Quantity	(A)
Oyster spat	Exporters' agreement	United States and Canada	Price	(C)
Pearls	Japan Pearl Exporters' Association	All Destinations	Price and quality	(B)
Swordfish, frozen	Japan Frozen Foods Exp. Ass'n	North, Central, and South American countries	Quantity	(B)
Tuna, canned	Japan Canned Foods Exp. Ass'n	United States	Quantity and variety	(A and B)
Tuna, canned in oil	Japan Canned Foods Exp. Ass'n	Canada	Price	(A)
Tuna, loin and disc, frozen	Japan Frozen Foods Exp. Ass'n	United States and Canada	Quantity	(A and B)
(A) Government-imposed control under authority of the Export Trade Control Order (Cabinet Order No. 378, December 1, 1949). Approval for export can be obtained either by direct submission of request to MITI or through association.				
(B) Government-imposed control under authority of the Export and Import Transactions Law (Law No. 299, August 5, 1952) and implementing regulations. Controls are administered by the association with MITI approval. Exporters not members of the association must submit export applications direct to MITI.				
(C) Exporter or trade association voluntary control under authority of Export and Import Transactions Law. Establishment of control approved by MITI.				

Japan (Contd.):

for in some cases MITI has delegated total responsibility for enforcing the control to exporters' associations. Those companies not members of associations must submit the requests directly to MITI. Controls for this category are exercised under authority of either the Control Order, the Transactions Law, or both.

With regard to the voluntary exporters' controls, these are permitted under the Transactions Law which established the legal basis for such agreements. The exporters entering into such agreements need only report to MITI on the establishment of a voluntary export control agreement and get its approval. Requests for MITI validation of individual shipments are not required on these commodities. MITI has indicated that its information on this latter category is far from complete since it suspects that considerably more private export control agreements are made than are reported officially.

MITI has stated that "check prices," as MITI defines them, are now being gradually eliminated. MITI regards "check prices" as those which it itself administers, not the exporters. These are being abandoned in favor of the more easily controllable quantity checks. A considerable number of private voluntary minimum price agreements among exporters will probably be retained, however. (United States Embassy, Tokyo, report of December 20, 1961.)

**Korea****LAWS DRAFTED TO ENCOURAGE
FISHING INDUSTRY DEVELOPMENT:**

Several laws designed to facilitate and encourage economic development of South Korea's fishing industry were drafted and as of February 1962 were under high-level consideration. Included are laws to reduce the taxes assessed against a fisherman's gross catch and establish fisheries cooperatives. Also included is more progressive Fisheries Law. Combined taxes which formerly amounted to as much as HW98,000 (US\$75.38) for each HW1,000,000 (\$769.23) worth of catch are reported to have been reduced to HW20,000 (\$15.38) effective January 1, 1962.

On October 1 the Office of Marine Affairs was abolished, and the Bureau of Fisheries was transferred to the Ministry of Agriculture and Forestry. (United States Embassy, Seoul, report of February 2, 1962.)

**Mexico****FISH MEAL PLANT GRANTED
TAX EXEMPTIONS:**

A Mexican fish meal plant in Ciudad del Carmen, Campeche, has been granted (*Diario Oficial* of February 2, 1962) certain tax exemptions under the Law for the Development of New and Necessary Industries. The exemption is for seven years and includes:

- a. All import duties on construction materials for erecting buildings, repair shops, storehouses, offices, and other installations necessary for the unit; machinery, machines, equipment, spare parts, tools, safety equipment for treating water; air conditioning equipment, and equipment or machinery necessary for producing power;
- b. The stamp tax;
- c. The Federal portion of the tax on mercantile income, if applicable;
- d. 30 percent reduction on income tax (*Cedula II*).

The plant is required to produce fish meal with a minimum protein content of 60 percent. Furthermore, foreign payments for acquiring or obtaining the use of foreign patents, trade marks or commercial names, and technical assistance, whether in the form of gifts, participation in production, sales or profits, and foreign payments in interest, in dividends, or in any other form whether in kind, surety, credit, or cash are limited to three percent of annual sales. (United States Embassy, Mexico, report of April 2, 1962.)

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**BRAZILIAN FREEZER-FISHING VESSEL
BEING BUILT IN MEXICO:**

A combination freezer-fishing vessel of original design is being built in Tampico, Mexico, for use in northeastern Brazil. Besides being a combination freezer-fishing vessel, she will be a combination fishing vessel adapted to catch spiny lobsters, shrimp, and snappers. The vessel is scheduled for delivery the last of August 1962. She will be 70 feet long with an 18 foot beam. The main engine will be 200 hp, and the auxiliary 45 hp. The hull and house will be steel and the deck wood.

Interesting features are: a box keel 18 inches wide by 12 inches high (containing the cooling system) to provide greater stability when the boat grounds at low tide; a removable mast and boom aft the trawling mast for carrying a steaming sail while snapper fishing; a special boom for hauling lobster pots; ten handreels for snapper fishing; freezing capacity for two tons of lobster tails daily; special bulb on rudder to add more speed; automatic pilot with remote control; radio direction finder; two radios, one 250 watts and the other 65 watts; two 100-fathom depth finders, one recording and the other visual; and two wooden lobster dories 18 feet long with 8 hp. inboard Diesels.

Insulation of the freezing compartment and hold will be six inches of expanded polystyrene.

Mexico (Contd.):

The boat will carry about 300 knocked-down lobster pots made of galvanized wire with a plastic coating. Built to the American Bureau of Shipping Standards, about 75 percent of the material used to build the vessel will be Mexican made. (United States Embassy, Mexico, report of April 2, 1962.)



Netherlands

IMPORT DUTIES ON CERTAIN FISHERY PRODUCTS CHANGED:

The Netherlands early this year listed certain changes in import duties of selected food products, including certain fishery products. The changes involved imports from other

increase its share of investment, which presently amounts to approximately 50 million yen (US\$1,389,000). The Japanese firm's officials feel that it is only a matter of time before the Lagos enterprise is approved by the Nigerian Government, said approval hinging only on an agreement being worked out between the Cooperative Fund and the firm.

Reportedly, the Japanese firm will share its 30 percent investment with a Japanese steel import-export firm, with each firm contributing an equal share of the total Japanese investment of 50 million yen.

As soon as approval is granted, the Japanese firm plans to commence operations, employing six trawlers (each of approximately 100 tons gross) and expects to produce annually between 6,000-8,000 metric tons of croaker and other species for delivery to the local Nigerian market at 60,000 yen (US\$1,67) per metric ton. The Japanese firm also plans to construct a 500-ton capacity cold-storage plant at Lagos and has applied for a loan of 500 million yen (US\$1,389,000) from the Cooperative Fund to finance its construction.

The Lagos base will be the first Japanese fishing venture to be undertaken in Nigeria and, as such, has drawn considerable attention, particularly since the Nigerian Government has welcomed establishment of the joint base at Lagos since it would promote domestic fish consumption and also reduce

Netherlands' Import Duties for Certain Fishery Products^{1/}

Tariff No.	Description	Third Countries		EEC	
		Prev. Tariff	New Tariff	Prev. Tariff	New Tariff
16.04	Chapter 16: Preparations of Meat, of Fish, of Crustaceans or Molluscs, Prepared or Preserved Fish, incl. Caviar and Caviar Substitutes: B. Salmonidae: I. Salmon in airtight containers II. Other: a. In airtight containers b. Not specified		(Percent).....	
		0	6	0	0
		25	23.5	16	14
16.05	Crustaceans and Molluscs, Prepared or Preserved: A. Shrimps, merely boiled and peeled, not preserved B. Other	0	6	0	0
		25	23.5	20	17.5

^{1/}Does not include all fishery products.

European Economic Community countries and third countries. Imports from the United States fall under the "third countries" category. (January 29, 1962, report from the United States Embassy, The Hague.)

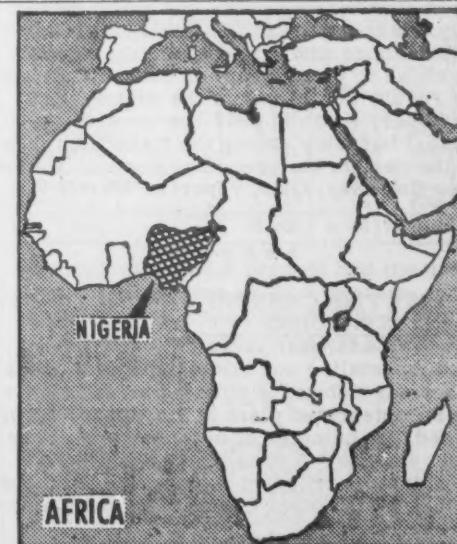


Nigeria

JAPANESE FIRM'S PROSPECTS OF NIGERIAN FISHING BASE IMPROVE:

A large Japanese fishing company's plan to establish a joint trawl fishing base at Lagos, Nigeria, equipped with cold-storage facilities has been held up owing to difficulties in obtaining a loan from the Economic Cooperative Fund. Indications are that as soon as the firm reaches an agreement with the Cooperative Fund, the Japanese Ministry of Finance and the Ministry of International Trade and Industry will approve the plan.

Present plans call for the Japanese firm to contribute 30 percent of the total capital investment and the Nigerian firm 70 percent. The Cooperative Fund fears that this ratio of investment would place the Japanese at a great disadvantage in the event that the Nigerian firm fails to procure necessary funds, and the Cooperative Fund wants the Japanese firm to



Nigeria (Contd.):

Nigeria's dollar purchases. (Shin Suisan Shimbun Sokuho, March 7, 1962.)

**Norway****WINTER HERRING FISHERY FAILS AGAIN:**

Continuing the trend which started in 1957, the migratory winter herring schools reached the Norwegian coast later, farther north, and in smaller numbers than the year before. The fishery finally got under way about March 1, 1962, and up to March 9, when the "large" herring season was declared ended, the catch had amounted to only 27,000 metric tons. Since March 9, after which the herring are known as "spring" herring, and up to March 15, another 34,000 tons had been landed.

Rapidly drawing to a close in March, the 1962 winter herring catch ("large" and "spring" herring combined) was expected not to exceed a total of 70,000 tons. This means still another year of virtual failure for this fishery which five years ago ended the season with a catch of more than one million tons.

Since the fishermen had expected a very poor winter herring catch this year, relatively few took part in the fishery. The majority of those who would normally participate chose to concentrate on other fisheries. As a result, the failure of the winter herring fishery again in 1962 has caused less financial hardship among the fishermen than was the case in the preceding years. (United States Embassy, Oslo, report of March 21, 1962.)

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LARGEST FISH CANNING PLANT EXPANDING:

Norway's largest packer of canned fish, including brisling and sild sardines, kippers and herring tidbits, is building a new, ultra-modern, integrated plant at Stavanger. When finished, the complex of buildings will cover almost 4 acres. A similar expansion and modernization program is in progress at the company's nine other canning factories elsewhere in Norway.

The new warehouse, equipped with lift trucks to utilize the height, can store 200,000 cases. The fully automated labeling department has a capacity of 220,000 cans per 9-hour working day. The freezing department, due to be ready in time for the next brisling season, will have a freezing capacity of about 24 tons a day, with storage for 1½ months production at the Stavanger plant. (News of Norway, April 5, 1962.)

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TRAWLERS MAY FISH IN 4-6 MILE BELT OF FISHING LIMITS ZONE:

Following a long debate, the Storting gave its approval on January 11, 1962, to the recommendations of the Ministry of Fisheries regarding special rights for Norwegian trawlers to fish inside Norway's 12-mile fishing limits boundary. The particular area in dispute was the belt between 4 and 6 miles from the coast. There was no question of granting any rights inside the 4-mile limit or of denying any rights outside the 6-mile limit.

In accordance with the new regulations, which are to be in force for a temporary period of unspecified duration, small trawlers (up to 300 gross registered tons) will be permitted to fish in the 4 to 6 mile belt. Larger Norwegian trawlers up to 500 g.r.t. which have previously fished in the zone may continue to fish there, but no new concessions will be given for vessels in this group. No trawlers above 500 g.r.t. will be permitted inside the 6-mile zone.

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TRAWLERS REQUIRED TO INCREASE NET MESH SIZE:

Also on January 11, 1962, the Storting proved legislation making it compulsory for all Norwegian trawlers, wherever they may operate, to increase the net mesh size to 130 millimeters (about 5.1 inches) in their light trawls and to 140 millimeters (5.5 inches) in their heavy trawls. This action was taken to demonstrate Norway's serious concern over the excessive catches of undersize fish in the North Atlantic and adjacent areas, and to set an example for other nations to follow. At present the international convention governing calls for a minimum mesh size of 120 millimeters (4.7 inches). (United States Embassy, Oslo, report of January 19, 1962.)

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Norway (Contd.):

COST OF BUILDING

WOODEN FISHING VESSELS:

The Secretary of the Norwegian Boat Builders Association in Oslo states that a wooden fishing trawler, 80 feet long, over-all, fully equipped, costs about 600,000 Norwegian kroner (US\$84,000). The vessel would cost about 50,000 kroner (\$7,000) more if made of steel. Prices are based on vessels with 240 to 300 hp. motors. About as many trawlers of this size are constructed of wood as of steel. The vessels are built to specifications of the Directorate of Fisheries and the Association. (Regional Fisheries Attache, United States Embassy, Copenhagen, January 31, 1962.)



Philippines

BIDS INVITED ON CANNED SARDINES:

The National Marketing Corporation (NAMARCO) of the Philippine Islands planned to purchase canned sardines on a bid basis and invited foreign firms to submit bids on March 12, 1962. NAMARCO plans to import a total of 407,500 cases of canned sardines.

Types of Canned Sardines Philippines Plans to Import		
Can Sizes	In Tomato Sauce	Natural
1-lb. oval	146,500	(Cases) . . .
8-oz. tall (buffet-style)	98,000	-
5-oz. tall	127,000	-
1-lb. tall	-	36,000
Total	371,500	36,000

Japanese exporters planned on bidding only for the 1-lb. oval and 5-oz. tall packs. However, reports indicated that South African packers were planning to offer their products 40 cents to one dollar below Japanese prices. (Translated from the Japanese periodical *Suisan Tsushin*, March 12, 1962.)

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SOUTH AFRICAN FIRMS LOW BIDDERS ON SALE OF CANNED SARDINES TO PHILIPPINES:

South African packers are reported to have made the lowest bids for the 407,500 cases of canned sardines which the National Marketing Corporation (NAMARCO) of the Philippine Islands offered to buy by March 12, 1962.

Bidder	Bids Placed by South African and Japanese Firms for Sale of Canned Sardines to the Philippines			
	In Tomato Sauce 1-lb. Oval	5-oz. Tall	5-oz. Tall	1-lb. Tall
(US\$ Per Case)				
South Africa: six firms	7.60	6.75	4.25	5.75
Japan: one firm	7.79	7.32	-	-
14 other firms	8.06	7.62	-	-

Among the Japanese bidders, one firm made a surprisingly low bid. However, the Japan Canned Sardine and Saury Sales Company does not recognize prices below \$8.06 for 1-lb. oval packs and below \$7.62 for 5-oz. tall packs, and would be expected to refuse to release those packs to the firm even if the company is awarded a sale. (*Suisan Tsushin*, March 14, 1962.)



Portugal

CANNED FISH PACK, 1961:

The Portuguese pack of canned fish in oil or sauce in 1961 increased 2,687 metric tons or 7.0 percent as compared with 1960. Sardines again accounted for the bulk of the pack in 1961 with 80.7 percent, followed by anchovy fillets with 6.6 percent, and tuna with 5.8 percent. Compared to 1960, in 1961 the pack of

Portuguese Canned Fish Pack, 1961				
Product	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	60,616	3,190	57,929	3,054
Chinchards	2,252	118	1,879	99
Mackerel	3,211	128	492	19
Tuna and tunalike	4,375	156	5,335	191
Anchovy fillets	4,985	498	3,919	392
Others	247	13	650	34
Total	75,686	4,103	70,204	3,789

sardines was up 4.6 percent and the pack of anchovy fillets was up 27.2 percent. But in the same period the pack of tuna and tunalike dropped 18.0 percent. (*Conservas de Peixe*, February 1962.)

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CANNED FISH EXPORTS, 1961:

Portugal's export tonnage of canned fish in 1961 was up 12.0 percent as compared to 1960. Sardines accounted for 82.8 percent of the 1961 exports, followed by anchovy fillets with 7.1 percent, and tuna with 4.4 per-

Portugal (Contd.):

cent. In 1961 the export tonnage was up for all the canned products listed separately except canned tuna. Exports of tuna dropped 6.0 percent because the pack was down. Exports of sardines were up 10.5 percent, chin-chards 31.8 percent, and anchovy fillets 21.3 percent.

Portugal's principal canned fish buyers in 1961 were Germany with 18,333 metric tons, followed by the United States with 7,913 tons, United Kingdom with 7,584 tons, Italy 6,016 tons, Belgium-Luxembourg 4,616 tons, and France 4,520 tons. Exports to the United States were up 14.8 percent from the 6,890 tons in 1960. (Conervas de Peixe, February 1962.)

Portuguese Canned Fish Exports, 1961					
Product	1961		1960		
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases	
<u>In Oil or Sauce:</u>					
Sardines	60,538	3,186	54,790	2,883	
Chinchards	2,282	120	1,731	91	
Mackerel	1,605	64	503	20	
Tuna and tunalike	3,226	115	3,432	123	
Anchovy fillets	5,195	519	4,284	428	
Others	247	13	397	20	
Total	73,093	4,017	65,137	3,565	

Note: See Commercial Fisheries Review, March 1962 p. 54, May 1961 p. 60.

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COD FISHERMEN'S INCOME FOR 1962/63 SEASON INCREASED:

Portugal's cod fishermen who fish the Newfoundland and Greenland Banks will be receiving a provisional raise in pay this season. The terms of their employment are set forth in a collective wage contract now nearly 10 years old, which has been amended piecemeal through the years and is due for a complete revision in 1963. A committee of representatives of the cod shipping owners in March 1962 was studying proposals for the contract, to be negotiated next year with the Casas dos Pescadores, representing the fishermen, and Government delegates.

For the 1962/63 season the estimated increases are: trawlers, officers 5 percent and fishermen 10 percent; line fishing vessels, officers 5 percent and fishermen 30 percent.

Specific amounts for the increases would be misleading, because for all personnel the pay depends in part on the catch, and in the

earnings of the line fishermen the catch is a key factor. In the case of both officers and men, pay is in two parts: (1) a fixed annual payment and (2) a variable payment, or bonus based on the amount of the vessel's catch, and for line fishermen only, the size of the individual's catch. No change is being made this season in the fixed salary payment, but bonuses have been increased, particularly those payable to the most efficient line fishermen. The increase this year might amount to as much as 50-60 percent for the best line fishermen.

In recent seasons, the fixed wage for fishermen has usually been 6,000 escudos (\$210), and their total payments per season, including bonuses, have averaged roughly 16,000 to 17,000 escudos (\$560 to \$595) for line fishermen and about 25,000 escudos (\$875) for fishermen on the trawlers. It should be recalled that the season for the line fishermen (though their work is much harder) runs about six months, whereas the trawlers operate for about 9-10 months. (The source for the information was the Guild of Codfish Vessel Owners, as reported by the United States Embassy, Lisbon, March 14, 1962.)



South Africa Republic

FISH MEAL, OIL, AND SOLUBLES PRICES, MARCH 1962:

The local prices of South and South-West African fish meal and fish solubles early in March 1962 were reported steady at the prices reported in the last quarter of 1961: both sold at R76 (US\$106.40) per short ton free on rail. This price was fixed by the South African Government in 1956.

For export, by the end of January 1962 all estimated fish meal production for 1962 was sold or committed. Fixed prices were agreed on for roughly 75 percent of the expected minimum production of 200,000 short tons which will be available for export (less about 20,000 short tons for domestic consumption). It is reported that with world fish meal prices rising and firming, there is considerable regret inside the South African fishing industry that so much was sold in October and November 1961 at the lower prices then prevailing.

The export price of fish meal sold to the United Kingdom's big buyers the latter part of 1961 for delivery during the period January through June 1962 was 14 shillings 6 pence (\$2.03) to 15 shillings (\$2.10) per protein unit in the long ton, c.i.f. British ports. On a basis of 65 percent protein, the dollar price per long ton is \$131.95 and \$136.50 or \$119.70 and \$123.83 per short ton. The United Kingdom in 1960 took roughly 50,000 short tons of South African fish meal. Indications for 1962 are that British purchases will be much higher.

The South African Fish Meal Producers' Association early in March was selling to the same British buyers at a slightly higher price, for delivery from July through December 1962: 15 shillings 6 pence (\$2.17) to 16 shillings (\$2.24) per protein

South Africa Republic (Contd.):

unit in the long ton. This equals for 65 percent protein to \$141.05 and \$145.60 per long ton or \$127.96 and \$132.09 per short ton. All prices are c.i.f. British ports.

West German buyers have agreed to take 18,000 long tons of South African fish meal; a price was agreed upon only for the first 6,000 tons and the price for the remaining 12,000 tons is being negotiated.

United States total imports of South African fish meal during 1962 will consist of 10,000 short tons sold at \$113 per short ton f.o.b. U.S. rail cars.

East Germany is now reported to be taking only 30,000-35,000 metric tons of fish meal from South Africa, compared to 50,000 tons as previously reported.

Japan is taking 5,000 metric tons during February, March, and April 1962 at a fixed price of \$124 per metric ton c.i.f. Japanese ports.

Israel is taking 13,000 metric tons for the whole year.

Chinese merchants in Singapore have bought 2,000 long tons of South African fish meal at \$145.60 a long ton c.i.f. Singapore. There is little doubt that this is intended for resale in Malaya, which officially boycotts South African goods.

South African fish meal is sold, as a policy, on the basis of 60 percent protein content guaranteed, but the Association is prepared, under some conditions, to guarantee up to 65 percent. The digestibility is guaranteed at 90 percent. Higher digestibility has been found in frequent tests.

South African fish solubles production for 1962 has all been sold, on an estimated production of 3,300 short tons. All of this was taken by West German buyers and one United States buyer at prices ranging from \$134.40 to \$145.60 per long ton c.i.f. ports. Presumably the lower price applies to the West German sales. (Prices are presumed to be for dried solubles.)

All 1962 South African fish oil has been committed to buyers at home and abroad. The domestic price is now under discussion; export prices are all presently being withheld. (Report of March 5, 1962, from the United States Consulate, Cape Town.)

Note: Values converted at rate of R1 equal US\$1.40.

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FISHERIES DEVELOPMENT CORPORATION SPONSORING TUNA PURSE-SEINING EXPERIMENT:

It had been reported in September 1961 that the Fisheries Development Corporation of South Africa (Ltd.) was waiting to receive permission from the Minister of Economics to re-allocate funds to engage a tuna vessel from a large United States west coast fish cannery firm. This project has failed to materialize, owing partly to the price asked by the cannery firm and partly to some opposition to the project within the South African fishing industry.

Since that time there have been other interesting developments. A South African firm, canners of abalone and producers of milled seaweed at Hermanus, Cape Province, obtained the 60-foot pilchard vessel *Thynnus* with financial help from the Fisheries Development Corporation. They undertook to fish for tuna with the vessel, using Japanese long-line gear, for five months ending in February 1962. Some spectacular catches were made, but on the whole the experiment was a failure. Whereas it had been hoped to catch a minimum of five tons per week the results were reportedly nearer five tons per month.

The Development Corporation has now taken this same vessel under charter, but has left it in the hands of the cannery firm. The vessel was scheduled to enter a Cape Town boatyard on March 15, 1962, for alterations which will enable it to use a purse seine. This will include relocating the deck winch and strengthening or replacing the main-mast boom to support a power block. The power block and the purse seine are being imported into South Africa. The net will be imported all made up as there is not sufficient know-how available locally to make it up properly.

The configuration of the South African pilchard vessel, with its mast forward of the midships hatch and its cabin aft makes it necessary to use the power-block and purse-seine gear differently than it is used on United States tuna purse seiners. For instance, no turntable will be installed. Special consideration has also to be given to the fact that the alterations made must still allow the vessel to be used as a pilchard vessel during the South African pilchard season, January 1 to July 31. If the experiment with this first vessel is successful, it will open up an alternate use for the 136 vessels of South Africa's pilchard fleet during the remaining five months of each year when they are normally idle. Consequently the alterations to be made cannot impede the vessel's primary mission which is still to catch pilchards. The *Thynnus* is a wooden-hulled boat with a service speed of 9 to 10 knots.

To promote the success of this experiment the Development Corporation has obtained the services of South Africa's top fishing skipper and winner of the 1961 Caltex "Star of the Fleet" trophy for the vessel "which in proportion to registered tonnage lands the greatest tonnage of fish during the season. His vessel landed 8,856 short tons of fish during the seven-months season. (United States Consulate, Cape Town, report of March 5, 1962.)

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FISHERY TRENDS, 1961:

South Africa Republic fishery trends in 1961 were reported in the March 14, 1962, Rand Daily Mail of Cape Town. The article stated:

"Though unjustified as far as other activities of the fishing industry are concerned, anxiety about South Africa's rock (spiny) lobster may lead to further restrictions on this commodity, according to the annual report of the Fisheries Development Corporation of South Africa.

"The report mentions that there had already been a reduction in export quotas as a conservation measure as a result of decreased availability which had led to higher production costs. A further reduction will be made in the coming season with the same purpose in view.

"Taking the fishing results for the financial year ended September 30, 1961, the report says that the intake of pelagic fish for South Africa and South-West Africa combined increased from 731,239 tons in 1960 to 937,544 tons in 1961. Meal production rose from 149,060 to 201,626 short tons, and oil production from 40,113 to 58,926 long tons.

South Africa Republic (Contd.):

"Two features dominated the South Africa season, namely the return of vast shoals of pilchards to the St. Helena Bay coast and the high quality of the pilchards landed.

"One large factory drew 85 percent of its raw fish from waters north of Dassen Island as compared with 22 percent in the previous year. . . ."

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PRODUCTION OF WHALE PRODUCTS DOWN IN 1961:

Although the number of whales taken by South Africa in 1961 exceeded the number taken in 1960, the total output of whale products was lower in 1961. This resulted from an increased take of the smaller sei species and a drop in the catch of the larger fin and sperm whales.

In 1961, 2,026 whales were taken, compared with 1,964 in 1960. The total value of whale products was US\$3,800,000 in 1961 as compared with \$4,200,000 in 1960. (United States Consulate, Durban, February 6, 1962.)



South-West Africa

PILCHARD PLANTS TO OPERATE YEAR-ROUND:

A result of the incursion of the Russian fishing fleet off South-West Africa is that the Administration of the Territory has agreed that the six pilchard fishing factories at Walvis Bay may operate year-round, according to an article which appeared in the February 23, 1962, issue of *The Financial Times*.

Previously they were limited to a fixed season--usually from the end of March until the end of November. The change is a distinct advantage for the fishing industry. Factories can now regulate their fishing and landing operations as they wish, operating when they expect the fish to be in the best condition. Two factories at Walvis Bay opened in mid-February 1962; the remaining 4 preferred to wait until mid-March when they expected the fish oil content of the fish to be higher and the fish in better condition.

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EASTERN EUROPEAN COUNTRIES TURN TO FISH MEAL AS SUBSTITUTE FOR SOYBEAN MEAL:

The Chairman of the South-West African Fishing Industry early in March 1962 stated that the famine in Communist

China has seriously reduced production and consequently exports of soybean meal to Eastern European countries with the result that those countries, especially East Germany, have turned to fish meal as a substitute to meet their requirements. (Previously, Red China shipped over 500,000 tons of soybean meal annually to Eastern European countries.) The demand for South-West African fish meal has, as a result, increased greatly in recent years to the point where in 1961 the South-West and South African producers were unable to fulfill the large number of orders from Eastern Europe. A considerable portion of those orders were passed on to Peru.

For 1962 the South African and South-West African fish meal production quotas have been increased by the International Association of Fish Meal Exporters (meeting in Lisbon) from 110,000 to 160,000 tons. All of that amount has reportedly been sold in advance.

An article in the *Financial Mail* of February 23, 1962, says that the fishing industry of South-West Africa has requested the South-West Africa Administration to abolish or at least increase the pilchard catching quota for this year, so that the producers will be able to meet the outstanding orders for fish meal from Eastern European countries.

In 1960 East Germany bought nearly 53,000 metric tons of fish meal from South Africa, with a value of R388,406 (US\$544,000). In 1959 East Germany had not purchased any fish meal from South Africa. Available trade statistics suggest that the level of exports to East Germany in 1961 continued at about the 1960 level. Toward the end of last year East Germany estimated its 1962 demand for fish meal at 100,000 metric tons and wished to purchase at least 50,000 tons from South Africa. Reportedly East Germany would buy its entire requirements for 1962 from South Africa, if not restrained by the International Fish Meal Producers Association.

The South-West fishing industry undoubtedly hopes that the South-West Africa Administration will act favorably on its request for an increase in the 1962 quota for pilchards, so that advantage can be taken of this (possibly temporary) increase in demand for fish meal, at least up to the limit of the new world market quota set for South Africa and South-West Africa this year. (United States Embassy, Pretoria, report of March 5, 1962.)



Surinam

SHRIMP INDUSTRY TRENDS AS OF MARCH 1962:

During the months of December 1961-February 1962, exports of frozen shrimp from Surinam (principally to the United States) rose sharply. This development may be attributed in large part to the arrival in November 1961 of a new manager to take charge of the packing plant in Paramaribo. During those three months the Paramaribo plant packed about 290,000 pounds of heads-off shrimp, compared with 150,000 pounds during August-October 1961, and an estimated 65,000 pounds during the first quarter of 1961. Since the Paramaribo plant has a legal monopoly^{1/} on the processing and exportation of shrimp in and from Surinam, the fortunes of the Surinam shrimp industry are closely bound to the operations of that firm.

The sudden boom in Surinam's shrimp exports is due to the fact that the new plant manager was able to bring with him (and subsequently attract) a number of privately-owned and operated United States vessels to Surinam. The plant manager who formerly managed a shrimp packing plant in British Guiana, was also able to attract 10 to 15 vessels owned by United States fishery interests to transfer operations from British Guiana to Surinam. The Surinam shrimp fleet as of March 1962 totaled 30 vessels.

In addition to the vessels mentioned and 2 or 3 others owned by the principal shareholder (a New York City lawyer

Surinam (Contd.):

and investor) of the Paramaribo plant, an occasional Japanese trawler puts into Paramaribo to discharge its shrimp catch. There are, according to reports, three Japanese boats plus a mothership operating off the coast of the Guianas.

A San Pedro, Calif., marine company has shown a cautious interest in the Surinam fishing industry. The firm is considering the possibility of establishing a fish processing plant on the Surinam River at or near Paramaribo. A proposal has been submitted to the Government's Investment Committee with a view to establishing what, if any, tax holiday and other financial incentives the Government might be prepared to offer if the company were to build a plant and "import" or develop a fishing fleet.

For some time the San Pedro firm has had one vessel, the *Don Pedro*, operating in Surinam waters. The *Don Pedro* is a 200-ton shrimp trawler equipped with quick freezing and frozen-storage facilities. The shrimp are frozen and packed at sea and simply transhipped at Paramaribo. This mode of operation presumably does not violate the Paramaribo plant's exclusive franchise, since the shrimp never "enter" Surinam.

A brief article in one of the local Paramaribo papers reported in March 1962 that two United States firms are in the process of building shrimp processing plants in French Guiana--one at St. Laurent du Maroni and the other at Cayenne. Approximately 15 trawlers will be attached to each plant, and both enterprises apparently intend to export to the United States via Surinam. The St. Laurent freezing plant is expected to commence operations in June and the Cayenne factory is scheduled for completion in September. (United States Consulate, Paramaribo, report of March 15, 1962.)



Sweden

IMPORT FEES REDUCED ON FROZEN FISH FILLETS FROM EFTA COUNTRIES;

The Swedish Agricultural Marketing Board announced late in February 1962 that import fees on frozen fish fillets of cod, haddock, saithe, whiting, and redfish or ocean perch imported from European Free Trade Association (EFTA) countries, including Finland, were to be further decreased effective March 1, 1962, and will amount to 0.27 crowns per kilo (2.4 U. S. cents a pound).

The first gradual reduction of the import fee on frozen fish fillets was made on July 1, 1960, when the fee was reduced from 0.45 crowns per kilo (3.9 cents a pound) to 0.36 crowns per kilo (3.2 cents a pound).

For frozen fish fillets of the same species listed but imported from other than EFTA countries, as well as for fresh and chilled fillets from EFTA and other countries, the import fee remains unchanged, or 0.45 crowns per kilo (3.9 cents a pound). Reported on March 2, 1962, by the United States Consulate, Goteborg.

Tahiti

TUNA BASE PLANNED:

A large southern California tuna-canning firm, which is planning on establishing a tuna base in the South Pacific Ocean, is reported to have concluded an agreement with a Japanese trading company whereby the latter firm would arrange to supply raw tuna to the base. The Japanese firm reportedly has submitted a petition to the Japanese Fisheries Agency seeking approval of this undertaking, according to a translation from the Japanese periodical Suisan Tsushin of March 15, 1962. The gist of the plan is:

1. A joint United States-French fishing company would be established at Papeete, French Tahiti, in the South Pacific Ocean, with a capital of US\$2 million. The United States firm would contribute 80 percent of the total investment and the French firm 20 percent.
2. The joint company will construct a \$650,000 cold-storage plant (50-ton capacity freezer, 1,100-ton capacity cold-storage plant, and an ice plant with a production capacity of 15 tons of ice per day) in the City of Papeete.
3. The Japanese firm will arrange to supply tuna to the base for freezing and subsequent shipment to the United States firm's packing plant in the United States.

The Japanese company hopes to contract for over 10 Japanese tuna vessels of less than 100 tons gross to fish for the Papeete base and is said to have already signed up more than half of the vessels. Reportedly, establishment of the joint United States-French fishing company has already been approved by the Tahitian Government. Plans call for utilizing the base as a fueling station for other large Japanese tuna vessels operating in nearby waters as well.



Taiwan

TWO LARGE TUNA VESSELS BUILT IN JAPAN FOR TAIWAN:

The two 500-ton-class tuna long-line vessels ordered from a shipbuilding company at Shimizu, Shizuoka Prefecture, Japan, by a fisheries company of Formosa, had been completed as of mid-March 1962 and were expected

Taiwan (Contd.):

to be delivered to the Formosan company. According to a November 1961 press report, the two vessels are to be based at the north Formosan port of Keelung and the Chinese fishing firm plans to send them to the Indian Ocean to fish for tuna. (Shin Suisan Shim bun Soko, March 15, 1962, and other sources.)



U.S.S.R.

FISHING ON GEORGES BANK IN THE NORTH ATLANTIC:

By the middle of February 1962, Soviet fishing vessels on Georges Bank in the North Atlantic numbered 10 factoryships of the 2,450-gross-ton Pushkin class and 4 factory-



Russian drifter trawler operating on "Northern Edge" of Georges Bank in October 1961. Gill nets are being hauled in. Large floats attached to float line of nets visible on surface in foreground.

ships of the 2,890-ton Leskov class, as well as 2 small trawlers. Observers report sizable hauls, primarily of herring. If last year's pattern of arrivals is followed, over 30 large factoryships were expected to be fishing on Georges Bank in March. (Unpublished sources.)

* * * * *

FISHING ACTIVITIES IN THE BERING SEA:

During February 1962 the Soviet herring fleet, led by the fish-locating flagship Braslav and two other large freezer stern-trawlers (Ulianovsk and Arseniev), was operating mainly in the vicinity of the Pribilof Islands. Approximately 100 medium trawlers were hauling their catches to refrigerated fish transports. They also deliver catches to stern-trawlers, because there are not enough refrigerated transports on hand.

Another fleet began fishing for flounder north of Unimak Island on February 14. Approximately 40 trawlers were led by the reconnaissance vessel Pelamida. (Unpublished sources.)

* * * * *

THIRD FACTORYSHIP FOR FAR EAST FISHING FLEET:

Pavel Chebotriagin, the third of a new series of factoryships with crab canning equipment, was launched at the Leningrad Admiralty Shipyards. Like the Eugenii Nikishin and Andrei Zakharov, it is assigned to the Soviet Far East Fishing Fleet. The 15,000-gross-ton vessel was expected in Vladivostok at the end of March 1962. (Unpublished sources.)

The December 6, 1961, issue of Ekonomitseskaja carried an article on the factoryship Andrei Sakharov which was delivered from the Leningrad shipyard about a year earlier and also operates from Vladivostok. The vessel is first and foremost equipped for catching and processing crab and "Pacific mackerel" (Cololabis saira), but can also fish for salmon and pollock.

"Pacific mackerel" are fished for at night with the aid of blue electric lights which attract the fish. The lights are fastened several meters from the vessel's side. When the lights have attracted a sufficient number of fish, they are changed to red. The fish are blinded and are easily taken in nets. (According to earlier information it was planned to catch about two million hectoliters or 186,000 metric tons of fish with the aid of electric lights in all of the U. S. S. R.)

Note: Also see Commercial Fisheries Review, April 1962 p. 64.

* * * * *

BUILDING LARGE TUNA VESSEL:

A new 930-ton tuna vessel being built in Leningrad will be 177 feet long with a maximum speed of 12 knots and a cruising range of 60 days. The net, managed by two winches, will be the main fishing gear used, although particularly large tuna will be killed with electric gear.

Upon completion the vessel will be assigned to the Soviet Pacific fishing fleet operated by the Main Administration of Far Eastern Fisheries, which plans to develop a significant tuna fishery in the Pacific and Indian Oceans. (Unpublished sources.)

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U. S. S. R. (Contd.):

FISHERY CATCH FOR 1961:

The Soviet Union's fisheries fulfilled the 1961 plan with a catch of about 3.7 million metric tons of fish, whales, and other aquatic products. The 1962 plan calls for a total catch of 3,937,000 tons. The catch in 1960 was 3.5 million tons (the catch of 3.1 million tons reported previously did not include whales). Marine fisheries now account for



Fig. 1 - A large Russian fishery factoryship.

about four-fifths (78 percent) of the U. S. S. R. catch, whereas only a decade ago inland fisheries accounted for over one-half (54 percent) of the catch.



Fig. 2 - Russian trawler operating in North Pacific. Length about 70 feet.

Soviet fishing in the Northwestern Atlantic began in 1957, and in the short span of four years catches rose to 258,000 metric tons in 1960. Fishing expansion into the North Pacific began in 1958, and catches in that area grew from 480,000 tons in 1950 to 860,000 tons in 1960. In 1959, the expansion of Soviet fishing into the Central and South Atlantic began. Antarctic whaling has also been intensified. The principal expansion areas during the Seven-Year Plan will be in the Northwest Atlantic, South Atlantic, Bering Sea, and Indian Ocean. (Translations from various monthly issues of Rybnoe Khoziaistvo.)

Note: Also see Commercial Fisheries Review, April 1962 p. 55.

* * * *

WHALING FLEET IN ANTARCTIC INCREASING:

Soviet participation in Antarctic whaling has increased while Norwegian and British participation has declined. A total of 67 Soviet whale catcher boats and 4 floating factories participated in the 1961/62 Antarctic whaling season. The Soviets operated 37 catchers and 2 floating factories in Antarctic waters in 1959/60, and 52 catchers and 3 floating factories in 1960/61. Out of the 18 new catchers built in 1961 by Antarctic whaling nations, 15 were Soviet. (Norsk Hvalfangst-Tidende, No 1, January 1962.)

* * * *

RUSSIANS APPREHEND DANISH FISHING VESSELS WITHIN TWELVE-MILE LIMIT:

In February 1962 at least two Danish salmon fishing cutters were apprehended by Russian authorities in the Baltic Sea, according to Copenhagen newspaper reports. The vessels were taken into port, fined for fishing within the 12-mile limit established by the U. S. S. R., and then released.

Baltic salmon are sought by fishermen from Poland, Sweden, Finland, and West Germany, as well as from Denmark. The Danes are reported to have the best boats and gear and to fish most intensively. The Danish catch of salmon in 1961 (practically all from the Eastern Baltic) amounted to 2.6 million pounds as compared with the record catch of 3.1 million pounds in 1960. Ex-vessel prices averaged 13.33 kroner per kg. (87.7 U. S. cents a pound) in 1961, 8.3 percent under the record price of 14.54 kroner per kg. (95.6 cents a pound) in 1960. (Fisheries Attaché, United States Embassy, Copenhagen, February 26, 1962.)

**United Kingdom**NEW REFRIGERATED VAN WITH AUTOMATIC DEFROST:

A British firm has introduced eighty 30-cwt. (1-1½-ton) vans equipped with forced-air evaporators, and reverse-cycle defrost system providing an operative temperature of -5° to -10° F. (-20.6° to 23.3° C.). The payload in the vans compares favorably with heavier vans up to 3 tons, using other types of cooling coils which take up considerable space and impose an uneconomic weight load.

United Kingdom (Contd.):

The defrost periods are determined by a timer at 4-hourly periods which initiates the defrost on the time cycle and terminates an evaporator temperature, a feature which eliminates unnecessary defrosting time. The power unit assembly is arranged to avoid taking up "payload" space with the compressor, engine, electric motor (for depot operation), and A. C. generator (to energize evaporator and condenser, fans, reversing valve, and timer) mounted on the off-side, underslung between wheels, while the air-cooled condenser and fan are mounted again underslung on the nearside.

The reverse cycle defrost system has been under test by the British firm throughout 1960 on a prototype vehicle and has successfully demonstrated that effective defrosting can be assured without temperature rise of stored products and enabling the vehicle to be in constant service, eliminating the weekly "day-off" for defrosting other types of cooling coils. (Modern Refrigeration, vol. 64, 1961, no. 758, p. 485.)

* * * * *

BRITAIN'S 1962 IMPORT QUOTAS FOR SOVIET CANNED FISH:

According to a report in the British Board of Trade Journal (March 16, 1962), the United Kingdom recently concluded negotiations with the Soviet Trade Delegation on quotas for Soviet goods to be imported into the United Kingdom for calendar year 1962. Among the consumer goods for import into the United Kingdom from the Soviet Union in 1962 were the following fishery products:

	Value, c.i.f.
Canned salmon	£550,000
Canned crab meat	450,000
Caviar (including red caviar)	60,000

Among the British consumer goods for export to the Soviet Union were:

	Value, c.i.f.
Salted herring	£160,000
White fish	350,000

The Board of Trade also gave notice that their Tariff and Import Policy Division was considering an application for removal of the import duty on fats and oil of fish and marine mammals, but not including sperm oil.

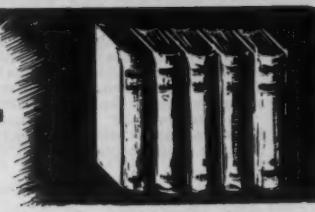
SOUNDS OF FRESH-WATER DRUM

Because only sexually mature fresh-water drum produce sounds, fishery researchers Hans Schneider and Arthur D. Hasler (University of Wisconsin) conclude that the function is one of communication during spawning. Their findings, based on hydrophone recordings in Lake Winnebago, Wis., plus detailed study of the sound-producing apparatus in 13 species, are reported in Zeitschrift fur vergleichende Physiologie 44 (1960).

Schneider and Hasler determined that drumming started in early May, reached the maximum in June, then decreased gradually until the end of August. During the spawning season in June, the first sounds were heard at about 10 a.m. daily, increased to highest activity in the afternoon, then decreased until drumming ceased at sunset. This rhythm was altered by changes in weather conditions.



FEDERAL ACTIONS



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

FEDERAL STANDARDS FOR GRADES FOR FROZEN FLOUNDER AND SOLE FILLETS:

Voluntary standards for grades for frozen flounder and sole fillets have been promulgated by the U. S. Department of the Interior. The standards were published in the March 21, 1962, Federal Register. They will become effective on April 20, 1962.

The standards were developed by the Bureau of Commercial Fisheries, Fish and Wildlife Service, in cooperation with the industry and the National Fisheries Institute, an industry trade association. Public hearings on the proposed standards were held in 1961 at Seattle, Wash., San Francisco, Calif., and Boston, Mass. As a result of research and discussions, the proposed standards were prepared and published in the Federal Register of January 5, 1962. No adverse criticism was received during the 30-day period provided for comment.

The standards include flounder or sole fillets frozen in solid blocks, with or without separators between fillets,

and fillets individually quick-frozen. The U. S. Grade A is the highest quality product; U. S. Grade B is acceptable in all respects. Frozen flounder or sole fillets which do not meet the A or B grades are considered substandard.

Firms processing the fish in accordance with the standards and under the continuous inspection of the Government have the privilege of displaying the Department of the Interior "shield of quality" upon the product.

This is the twelfth voluntary standard of quality promulgated by the Department. Standards already have been established for frozen fish blocks, frozen fried fish sticks, frozen raw breaded fish portions, frozen cod fillets, frozen haddock fillets, frozen ocean perch fillets, frozen halibut steaks, frozen salmon steaks, frozen raw breaded shrimp, frozen raw headless shrimp, and frozen fried scallops.

The Department also conducts a continuous inspection service for those who wish it. Forty processors annually producing approximately 160 million pounds of fishery products participate. The Department also offers a "lot" inspection program. Under this program, a certificate showing the grade of the product may be issued, but the Department's "shield" may not be displayed on individual packages. All costs of product-certification services are borne by the industry.

The standards as published in the Federal Register of March 21, 1962, follow:

Title 50—WILDLIFE AND FISHERIES

Chapter II—Bureau of Commercial Fisheries, Fish and Wildlife Service, Department of the Interior

SUBCHAPTER G—PROCESSED FISHERY PRODUCTS, PROCESSED PRODUCTS, THEREOF, AND CERTAIN OTHER PROCESSED FOOD PRODUCTS

PART 274—UNITED STATES STANDARDS FOR GRADES OF FROZEN FLOUNDER AND SOLE FILLETS¹

On page 107 of the FEDERAL REGISTER of January 5, 1962, there was published a notice and text of a proposed new part 274 of Title 50, Code of Federal Regulations. The purpose of the new part is to issue United States Standards for Grades of Frozen Flounder and Sole Fillets under the authority transferred to the Department of the Interior by section 6(a) of the Fish and Wildlife Act of August 8, 1956 (16 U.S.C. 742e).

Interested persons were given until February 5, 1962, to submit written comments, suggestions or objections with respect to the proposed new part. No objections were received and the proposed new part is hereby adopted without change and is set forth below. This

¹ Compliance with the provisions of this standard shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

part shall become effective at the beginning of the 30th calendar day following the date of publication in the FEDERAL REGISTER.

Dated: March 14, 1962.

STEWART L. UDALL,
Secretary of the Interior.

Sec.

- 274.1 Description of the product.
- 274.2 Styles of frozen flounder and sole fillets.
- 274.3 Grades of frozen flounder and sole fillets.
- 274.11 Determination of the grade.
- 274.21 Definitions.
- 274.25 Tolerances for certification of officially drawn samples.

AUTHORITY: §§ 274.1 to 274.25 issued under sec. 6(a) of the Fish and Wildlife Act of Aug. 8, 1956; 16 U.S.C. 742e.

§ 274.1 Description of the product.

Frozen flounder and sole fillets consist of clean, wholesome fillets processed and frozen in accordance with good commercial practice and maintained at temperatures necessary for their preservation. The fillets may be cut transversely or longitudinally into subunits.

NOTE: This standard does not provide for the grading of units of fish flesh cut from previously frozen fish blocks, slabs, or similar material.

The product covered by this standard is prepared from the following species only:

SOLES

Dover sole (*Microstomus pacificus*)
English sole (*Parophrys vetulus*)

Gray sole (*Glyptocephalus cynoglossus*)
Petrale sole (*Eopsetta jordanii*)
Lemon sole (*Pseudopleuronectes americanus*, over 3½ pounds)
Rock sole (*Lepidopsetta bilineata*)
Sand sole (*Psettichthys melanostictus*)

FLOUNDERS

Blackback (*Pseudopleuronectes americanus*, less than 3½ pounds)
Yellowtail flounder (*Limanda ferruginea*)
Dab, place (*Hippoglossoides platessoides*)
Fluke (*Paralichthys dentatus*)
Starry flounder (*Platichthys stellatus*)

§ 274.2 Styles of frozen flounder and sole fillets.

(a) *Style I—Solid pack.* Fillets are frozen together. Individual fillets can be separated only by thawing the entire package or part of the package, depending on absence or presence of separators.

(1) *Substyle A.* Fillets are packed into a single solid block.

(2) *Substyle B.* Fillets are subpacked with separators into smaller weight units.

(b) *Style II—Individually-quick-frozen pack (IQF).* Fillets are individually quick frozen. Individual fillets can be separated without thawing.

§ 274.3 Grades of frozen flounder and sole fillets.

(a) "U.S. Grade A" is the quality of frozen flounder or sole fillets for which the total score is not less than 85 points, when the fillets are rated in accordance

with the scoring system outlined in the following sections.

(b) "U.S. Grade B" is the quality of frozen flounder or sole fillets for which the total score is less than 85 points but is not less than 70 points, when the fillets are rated in accordance with the scoring system outlined in the following sections.

(c) "Substandard" is the quality of frozen flounder or sole fillets that fail to meet the requirements of the U.S. Grade B.

TABLE I—SCHEDULE OF POINT DEDUCTIONS PER FOOT OF FLOUNDER OR SOLE FILLETS AND GRADING SCORE SHEET

	Scored factors	Description of quality variation	Deduct	Deductions
Frozen	1. Appearance	Adversely affected by imbedded packaging material, voids, depressing surface irregularity, and poor arrangements of fillets:	Slight... Moderate... Excessive...	2 4 10
	2. Dehydration	For each inch square (determined by grid) of affected area:	Color masking, easily scraped off... Deep, not easily scraped off...	1/4 1
	3. Weights	(a) For each fillet or piece less than 1 oz., except first fillet or piece. (b) For sole only: For each fillet from 1-2 oz., except first fillet. For flounder only: For each fillet from 1-2 oz., except first three fillets.		5 2 2
Thawed	4. Workmanship defects	For each inch square (determined by grid) of affected area:	(a) Cutting and trimming (ragged edges, holes, tears, improper or unnecessary cuts and lace). (b) Blemishes (belly lining, blood spots, bruises, extraneous material, fine, discolored pug marks, scales and skin). (c) Bones (bones normally removed).	3½ 2 3
	5. Color	(a) Deteriorative discoloration (yellowing of fatty portion and/or darkening of light portion). (b) Non uniformity of color (natural color differences within package due to packing fish of contrasting color).	Slight... Moderate... Excessive... Moderate... Excessive...	2 5 15 2 5
	6. Abnormal condition	Usability and/or desirability of fillets impaired by abnormal conditions (jellied, milky, chalky).	Moderate... Excessive...	15 31
Cooked	7. Texture	Tough, dry, fibrous, or watery for species involved.	Slight... Moderate... Excessive...	4 8 15
	8. Odor and flavor	Very good: Full typical odor and flavor of fresh fish. Good: Noticeable decrease in typical odor and flavor of fresh fish. Reasonably good: Lacking typical odor and flavor of fresh fish, but not objectionable. Substandard: Objectionable odor and/or flavor.		6 16 31

Total deductions.

Score (100 minus total deductions).

Grade (100 to 85=Grade A; 84 to 70=Grade B; 69 and below=Substandard).

Label.....

Actual net weight.....lb.....oz.

Size of lot.....

Size and kind of container.....

Size of sample.....

Container mark or identification.....

Number of packages per master carton.....

Type of overwrap.....

Remarks.....

§ 274.21 Definitions.

(a) "Slight" refers to a condition that is scarcely noticeable but that does affect the appearance, desirability, and/or eating quality of the fillets.

(b) "Moderate" refers to a condition that is conspicuously noticeable but that does not seriously affect the appearance, desirability, and/or eating quality of the fillets.

(c) "Excessive" refers to a condition that is conspicuously noticeable and that does seriously affect the appearance, desirability, and/or eating quality of the fillets.

(d) "Bones normally removed" refers to (1) nape membrane bones (adjacent to visceral cavity) and to (2) radial bones (adjacent to fins and lace area).

(e) "Determined by grid" means that a standard grid of 1-inch squares is placed over the defect area, and points are deducted (as specified in table 1) for each square of affected area under the grid, each square being counted as one whether it is full or fractional.

(f) "Thawed state" means that the frozen product has been placed within a film-type pouch and warmed to an internal temperature of about 32° F by immersing the pouch in running tap water of about 50° to 70° F. Thawing time usually takes 25 to 45 minutes for a 1-pound package.

(g) "Cooked state" means that the thawed, unseasoned product has been placed within a boilable film-type pouch and heated to an internal temperature of about 160° F by immersing the pouch

Note: See Commercial Fisheries Review, February 1962 p. 101.



NATIONAL MARINE FISHERIES SERVICE

U.S. DEPARTMENT OF COMMERCE

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in boiling water. Cooking time usually ranges from 3 to 5 minutes for single fillets and from 7 to 10 minutes for 1-pound packages of fillets.

(h) "Actual net weight" means the weight of the fish flesh within the package after all packaging material, ice glaze, or other protective coating have been removed. ("Actual net weight" of frozen glazed fillets is determined as follows: (1) Rapidly remove excessive ice layers or pockets with running tap water or nozzle-type water spray. (2) Rapidly thaw remaining surfaces of frozen fish sufficiently with tap water or spray to prevent refreezing free surface water. (3) Gently wipe off all free water with a moisture-saturated paper towel. (4) Weigh the fish to obtain "actual net weight".

(i) "Abnormal condition" means that the normal physical and/or chemical structure of the fish flesh has been sufficiently altered so that the usability and/or desirability of the fillet is adversely affected. It includes, but is not limited to, the following examples:

(1) "Jellied" refers to the abnormal condition wherein a fillet is partly or wholly characterized by a gelatinous, glossy, translucent appearance, feels slimy to the touch, and retains its gelatinous, slimy properties in the cooked state.

(2) "Milky" refers to the abnormal condition wherein a fillet is partly or wholly characterized by a milky-white, excessively mushy, pasty, or fluidized appearance.

(3) "Chalky" refers to the abnormal condition wherein a fillet is partly or wholly characterized by a dry, chalky, granular appearance and fiberless structure.

(j) "Odor and flavor" is classified as follows:

(1) "Very good": Fish in this category have essentially the full, good typical odor, and flavor of the indicated species.

(2) "Good": Fish in this category show a noticeable decrease of the good, typical odor and flavor of the indicated species, and/or may have certain less acceptable natural environmental odors and flavors of slight intensity (iodoform-type, phenolic-type, feed-type, etc.), but may have no odors and flavors.

(3) "Reasonably good": Fish in this category may be flat, or completely lacking in the good typical odor and flavor of the indicated species, and/or may have certain less acceptable natural environmental odors and flavors of moderate intensity (iodoform-type, phenolic-type, feed-type, etc.) but may have no objectionable odors and flavors.

(4) "Substandard": Fish in this category have odors and flavors that are objectionable.

LOT CERTIFICATION TOLERANCES

§ 274.22 Tolerances for certification of officially drawn samples.

The sample rate and grades of specific lots shall be certified in accordance with Part 260 of this chapter (Regulations Governing Processed Fishery Products, Vol. 25 F.R. 8427 Sept. 1, 1960).

Department of State

INTERNATIONAL COOPERATION ADMINISTRATION

FISHERIES GRANTS TO FOREIGN COUNTRIES:

A list of financial grants by the International Cooperation Administration in fiscal year 1961 to aid and rehabilitate the fisheries of a number of foreign countries appeared in the March 13, 1962, Congressional Record. Senator Gruening presented the list in the Senate for publication. The fishery projects financed for fiscal year 1961 follow:

Agriculture and Natural Resources, Fiscal Year 1961	
Area, Country, and Project	Amount
Far East:	
Cambodia: Fisheries conservation	\$ 24,000
Republic of China: Fisheries development . . .	21,000
Indonesia: Expansion and modernization of marine and inland fisheries	70,000
Korea: Fisheries development (typhoon rehabilitation)	131,000
Near East and South Asia:	
India: Expansion and modernization of marine and inland fisheries	40,000
Pakistan: Fisheries development	15,000
Africa:	
Liberia: Fresh-water fisheries	30,000
Somali Republic: Fisheries improvement	30,000
Tunisia: Aid to commercial fisheries	27,000
Latin America:	
Overseas territories: shrimp and fisheries	19,000
Europe:	
Yugoslavia: Fisheries	76,000
Total	\$483,000

Note: Also see Commercial Fisheries Review, April 1961 p. 92.

**Department of the Treasury****COAST GUARD****CERTAIN FISHING VESSEL DATA IN COAST GUARD FILES SHOULD BE KEPT UP-TO-DATE:**

The U. S. Coast Guard advises that there is certain information concerning fishing vessels which should be kept current in the Coast Guard files. In particular, it is suggested that if a vessel owner changes the color scheme of his vessel or vessels, he should notify the Coast Guard of such change for the following reason: Coast Guard procedure for locating and assisting a fishing vessel in distress, particularly when airplanes or helicopters are used, is to first acquaint the crew of the rescue craft with a description of the distressed vessel, taken from their files. Thus, if such vessel is on file as being painted white and trimmed in

black, and the owner has changed this color scheme without notifying the Coast Guard, the aircraft may pass by the stricken vessel and continue its search for one that fits the description on file.

A further suggestion to promote quick recognition of a vessel from the air is to have its name painted on top of the wheelhouse in large letters. The latter can be quite helpful to aircraft rescue crews in making a quick recognition of a distressed vessel, particularly in severe weather.

BUREAU OF CUSTOMS**IMPORTS OF CANNED-IN-BRINE TUNA UNDER QUOTA PROVISO FOR 1962:**

The quantity of tuna canned in brine which may be imported into the United States during calendar year 1962 at the 12½ percent rate of duty is limited to 59,059,014 pounds (or about 2,812,000 standard cases of 48 7-oz. cans). This is 3.4 percent more than the 57,114,714 pounds (about 2,720,000 standard cases) in 1961, 10.5 percent more than the 53,448,330 pounds in 1960, 12.8 percent more than the 52,372,574 pounds in 1959, 32.1 percent more than the 44,693,874 pounds in 1958, and 29.9 percent more than the 45,460,000-pound quota for 1957. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Any tuna classifiable under Tariff Act paragraph 718(b)--fish, prepared or preserved in any manner, when packed in airtight containers. . .(except fish packed in oil or in oil and other substances; . . .)--which is entered or withdrawn for consumption is included.

A proclamation (No. 3128), issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade. The quota is based on 20 percent of the previous year's United States pack of canned tuna.

The 1962 tariff-rate quota was published in the April 10, 1962, Federal Register by the Bureau of Customs of the U. S. Department of the Treasury.

Note: (1) Pounds converted to cases at 21 pounds equal 1 standard case of 48 7-oz. cans.
 (2) Also see Commercial Fisheries Review, February 1962 p. 45.



United States District Court

FISHERMEN ARE INDEPENDENT CONTRACTORS FOR TAX PURPOSES:

Captains and crewmen working on shares on shrimp vessels are not employees for tax purposes, but are independent contractors. This was the gist of a ruling by Federal Judge David W. Dyer of the United States District Court in Miami, Fla., in March 1962. The decision handed down was specifically that captains and crewmen working on shares on Charles Ludwig's shrimp vessels out of Tampa, Fla., were not his employees for tax purposes, but were independent contractors. The Government insisted upon having a jury decide whether Charles Ludwig was entitled to a refund of taxes he paid by mistake over the years. However, Judge Dyer ruled that there was nothing for the jury to decide. Evidently this means that fishermen are not employees when it comes to paying employment taxes.

This decision was the same as the one in the Crawford Packing Company case. In that case the United States District Court for the Southern District of Texas in a trial at Galveston, Tex., on January 23, 1962, decided that shrimp fishermen, working on a lay or share basis, are not employees of the boat owners but are independent contractors for Federal employment tax and income withholding tax purposes. The Crawford Packing Company of Palacios, Tex., in a civil suit against the United States of America contended that the fishermen were free from detailed control of their fishing activities by the Crawford Packing Co. Judge James Noel, after a two-day hearing, ruled that the Government did not overcome Crawford's clear showing that the fishermen were free from direction and control of their fishing activities and that their earnings were dependent solely upon their skill, initiative, weather, and good fortune.

Note: See *Commercial Fisheries Review*, Sept. 1961 p. 114.



Eighty-Seventh Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon.



Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

FISHERY MARKETING ACT AMENDMENT: S. 3093 (Magnuson and Bartlett) introduced in the Senate on April 2, 1962, to make clear that fishermen's organizations, regardless of their technical legal status, have a voice in the ex-vessel sale of fish or other aquatic products on which the livelihood of their members depend; referred to the Committee on Commerce. This bill would amend the Fisheries Marketing Act of 1934, an act originally designed to provide fishermen as primary producers with the right of self-association for cooperative improvement of their conditions. The amendment seeks to bring the Marketing Act up to date by relating it to the practical problems that presently cloud the rights of fishermen to associate themselves together, whether in unions or cooperatives, and collectively bargain for a fair return on the fish harvested. Would extend bargaining privileges to organizations composed of both employee fishermen and those who own or have an interest in the boats or gear with which they fish. H. R. 11159 introduced in House, April 9, 1962, similar to S. 3093; referred to the Committee on Merchant Marine and Fisheries.

FISHING VESSEL DISASTER LOANS: H. R. 10827 (Johnson) introduced in the House on Mar. 20, 1962, to provide disaster loans to fishing vessel owners and operators and other boat owners and operators engaged in the seafood industry adversely affected by failure of the seafood resource, and for other purposes; referred to the Committee on Merchant Marine and Fisheries. Similar to other bills previously introduced in the House.

GAME AND FOOD FISH CONSERVATION IN DAM RESERVOIRS: H. R. 11275 (Miller) was introduced in the House on April 12, 1962, to authorize the Secretary of the Interior to provide financial assistance to States in research programs to improve the conservation of fish in reservoirs; referred to the Committee on Merchant Marine and Fisheries. Similar to other bills previously introduced.

HEALTH, EDUCATION AND WELFARE APPROPRIATIONS FY 1963: Departments of Labor and Health, Education, and Welfare Appropriations for 1963 (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Eighty-Seventh Congress, Second Session, on Department of Health, Education and Welfare, Part I). It includes funds for the Food and Drug Administration and the training program in the fishery trades and industry.

The House on Mar. 27, 1962, by a voice vote passed H. R. 10904, making appropriations for the Departments of Labor and Health, Education, and Welfare and related agencies for the fiscal year 1963. Included are funds for the training program in the fishery trades and industry, the Food and Drug Administration, and appropriations for the water pollution program. The latter program provides for regional laboratories located in strategic points throughout the country to promote research and training activities and provide a base of action for State, interstate and Federal agencies cooperating to eliminate water pollution. In addition to the laboratories, the Committee's report to the House pointed out the need for two specialized facilities to deal with the problems of aquatic life in fresh and marine waters. The two facilities would (1) establish water quality criteria for protecting fish and other aquatic life and (2) establish criteria for a healthy physical and chemical water environment that will permit the propagation and growth of aquatic life as well as bare survival.

INDIAN FISHING RIGHTS: H. J. Res. 698 (Pelly) was introduced in the House on Apr. 17, 1962, a joint resolution regarding Indian fishing rights. Proposes to solve the problem of treaty or non-treaty Indians fishing off the reservation in violation of the State regulations; referred to the Committee on Interior and Insular Affairs.

INTERIOR APPROPRIATIONS FY 1963: On Mar. 21, 1962, the Senate received the House-passed bill H. R. 10802, an act making appropriations for the Department of the Interior and related agencies for the fiscal year ending June 30, 1963. Referred to the Committee on Appropriations. Included in the budget are estimates for the U. S. Fish and Wildlife Service and its two Bureaus--Commercial Fisheries and Sport Fisheries and Wildlife.

MEDICAL CARE FOR VESSEL PERSONNEL: H. R. 10921 (Pelly) introduced in the House on Mar. 26, 1962, to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel; referred to the Committee on Interstate and Foreign Commerce. Similar to S. 367 introduced in the Senate on Jan. 11, 1961.

NORTH PACIFIC FISHERIES PROBLEMS: Northwest Salmon Fisheries Resources (Joint Hearings before the Senate Committee on Commerce and the House Merchant Marine and Fisheries Committee, Eighty-Seventh Congress, 1st Session), 127 pp., printed. Reports on a hearing held on October 13, 1961, at Tacoma, Washington. Testimony was given by Washington State personnel, fishermen, unions, and spokesmen for the Indians.

OYSTER BROOD STOCK PURCHASES: House Report No. 1449, Promoting the Production of Oysters by Propagation of Disease-Resistant Strains (Report from the House Committee on Merchant Marine and Fisheries to accompany H. R. 7336), 4 pp., printed. Committee reported the bill favorably with amendments and recommended passage. Contains the purpose of the bill, background of the legislation, cost of the legislation, changes in existing law and departmental reports. The amendments are as follows: As amended, the Secretary of the Interior is authorized with respect to those States where he finds that excessive mortality of oysters presents an immediate and substantial threat to the economic stability of the oyster industry in such

area or region, to acquire oyster brood stock that he believes possesses resistance to the causative agency of such excessive mortality. The purchase of oyster brood stock by the Secretary shall be conditional upon the participating State or States paying one-third of the cost. The amended title of the bill shall be "A bill to promote the production of oysters by propagation of disease-resistant strains, and for other purposes."

On April 3, 1962, the House passed with amendment H. R. 7336. The bill was received by the Senate on April 4, 1962, and was referred to the Committee on Commerce.

OYSTER PLANTERS DISASTER LOANS: The House Committee on Agriculture met on Mar. 22, 1962, in executive session and ordered favorably reported to the House H. R. 946 (amended), to extend to oyster planters the benefits of the provisions of the present law which provide for production disaster loans for farmers and stockmen. The House on Mar. 26, 1962, received the Committee's favorable report (H. Report No. 1502) on H. R. 946; referred to the Committee of the Whole House on the State of the Union.

H. Rep. No. 1502, Emergency Loans to Oyster Planters (Report from the Committee on Agriculture, House of Representatives, 87th Congress, 2nd Session, to accompany H. R. 946), 4 pp., printed. Committee reported the bill favorably and recommended passage with amendments. Contains the purpose of the bill, need for the legislation, cost, committee amendment, departmental recommendations, and changes in existing law. The bill would amend the emergency loan provisions of the Consolidated Farmers Home Administration Act of 1961 to make it clear that oyster planters are included among the eligible recipients of such loans.

On April 3, 1962, the House passed with amendment H. R. 946. The bill was received by the Senate on April 4, 1962, and was referred to the Committee on Agriculture and Forestry.

PRICE-QUALITY STABILIZATION: H. R. 10862 (Glenn) introduced in the House on Mar. 21, 1962, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and re-sellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes. Also introduced in the House on Mar. 29, 1962, H. J. Res. 679 (Glenn), and H. R. 11227 (Dent) Apr. 11, 1962, all referred to the Committee on Interstate and Foreign Commerce. Similar to other bills previously introduced in the House and Senate.

Senate Committee on Commerce on April 9, 1962, held hearings on S. J. Res. 159. Testimony was heard from various members of the Senate and industry personnel. The Committee resumed hearings on Apr. 19, 1962.

SAFETY OF LIFE AT SEA CONVENTION: The Senate Committee on Foreign Relations met in executive session on Mar. 28, 1962, and ordered favorably reported the International Convention for the Safety of Life at Sea, dated at London on June 17, 1960.

The Senate on April 12, 1962, adopted resolution of ratification concerning the International Convention of

the Safety of Life at Sea (Ex. K, 87th Cong., 1st Session). Ex. K was transmitted by the President to the Senate on April 27, 1961, together with the report of the Secretary of State, a copy of the final act of the Convention held at London from May 17 to June 17, 1960, and a copy of the report of the delegation of the United States to that Conference. The Convention, open for signature from June 17 to July 17, 1960, was signed by the United States on June 17, 1960, and by 38 other Governments in that period. No House action necessary.

SALMON DEVELOPMENT PROGRAM IN CALIFORNIA: S. 3184 (Engle), H. R. 11343 (Hagen), H. R. 11352 (McFall), H. R. 11356 (Clem Miller), H. R. 11357 (George Miller), H. R. 11361 (Shelley), H. R. 11366 (Cochran), and H. R. 11371 (Johnson) were introduced in the Senate and House, respectively, on Apr. 17, 1962. Would direct the Secretary of the Interior to initiate a salmon and steelhead development program in California. Would authorize an anadromous fish development program in California. This is an Administration measure, based on joint recommendations of the U. S. Fish and Wildlife Service and the California Department of Fish and Game. Existing facilities of the Bureau of Sport Fisheries of the Fish and Wildlife Service and those of the California Department of Fish and Game would be utilized to the fullest extent. The Senate bill was referred to the Committee on Commerce, and the House bills to the Committee on Merchant Marine and Fisheries.

SCIENCE AND TECHNOLOGY REORGANIZATION PLAN MESSAGE FROM THE PRESIDENT: The House and Senate on Mar. 29, 1962, received from the President "Reorganization Plan No. 2 of 1962, Relating to Certain Reorganizations in the Field of Science Technology" (House Doc. 372); referred to the Committee on Government Operations of the Senate and the House. "Part I of the reorganization plan establishes the Office of Science and Technology as a new unit within the Executive Office of the President; places at the head thereof a Director appointed by the President and by the advice and consent of the Senate and makes provision for a Deputy Director similarly appointed; and transfers to the Director certain functions of the National Science Foundation." Message points out "...the further steps contained in Part I of the reorganization plan are now needed in order to meet most effectively new and expanding requirements brought about by the rapid and far-reaching growth of the Government's research and development programs. These requirements call for the further strengthening of science organization at the Presidential level and for the adjustment of the Foundation's role to reflect changed conditions. The Foundation will continue to originate policy proposals and recommendations concerning the support of basic research and education in the sciences, and the new Office will look to the Foundation to provide studies and information on which sound national policies in science and technology can be based..." Part II of the reorganization plan provides for certain reorganizations within the National Science Foundation which will strengthen the capability of the Director of the Foundation to exert leadership and otherwise further the effectiveness of administration of the Foundation.

TARIFF CLASSIFICATION RESTATEMENT IN TARIFF ACT OF 1930: Senate Report No. 1317, Tariff Classification Act of 1962 (Report from the Senate Committee on Finance, Senate, 87th Congress, 2nd Session, to accompany H. R. 10607), 12 pp., printed. Committee reported the bill favorably without amendment and recommended passage. Contains the purpose

of the bill, background, summary of the bill, and technical explanation of the bill. The purpose of this bill is to provide for the adoption and implementation of revised tariff schedules and to make certain amendments in existing law necessitated by the adoption of such revised schedules.

The Senate on April 17, 1962, passed with amendment H. R. 10607 to amend the Tariff Act of 1930 and certain related laws to provide for the restatement of the tariff classification provisions, and for other purposes.

TRADE AGREEMENTS: A message from the President (H. Doc. 358), Trade Agreements With The European Economic Community, The United Kingdom, Norway, and Sweden, was received Mar. 7, 1962, in the House and Mar. 8, 1962, in the Senate. The message transmits copies of trade agreements with the European Economic Community, the United Kingdom, Norway, and Sweden, including schedules signed on behalf of the United States on Mar. 5 and Mar. 7, 1962, and reports actions taken with respect to peril points. Referred to the House Committee on Ways and Means and the Senate Committee on Finance.

TRANSPORTATION SYSTEM: On April 5, 1962, the House and the Senate received a message from the President (H. Doc. 384), The Transportation System of Our Nation. Recommendations made in the message would affect and benefit the fishing industry. The fishery exemption from I. C. C. economic regulation of motor carriers will be continued. A policy of encouraging less regulation of carriers and more freedom to adapt to competitive situations was suggested. With more competition among carriers, fishery shippers should benefit through better rates and services. The agricultural and fishery exemptions were discussed separately in the message. Heretofore, it was usual to mention only the agricultural exemption. The President also requested encouragement of through and joint rates and service among the several modes of transportation. The message was referred to the House Committee of the Whole House on the State of the Union and the Senate Committee on Commerce.

TRADE EXPANSION ACT OF 1962: H. R. 11102 (Blitch) introduced in the House on April 4, 1962, to replace the existing tariff schedules and trade agreements provisions of the Tariff Act of 1930, and for other purposes; referred to the Committee on Ways and Means. Principle purpose is to expand foreign trade with other nations when such trade is mutually beneficial to the United States and other friendly nations and when it does not injure United States industry or agriculture or create domestic unemployment.

The House Committee on Ways and Means, on April 11, 1962, concluded its public hearings (which began on Mar. 12, 1962) on H. R. 9900, the "Trade Expansion Act of 1962," to provide assistance to business enterprises and individuals to facilitate adjustments made necessary by the trade policy of the United States. The purpose is to offset the impact on American businesses, especially smaller businesses, of a more liberal national trade policy by a broad-gauge program of adjustment assistance. During the hearings testimony was heard from members of Congress, Government agencies, and industry. The Committee was scheduled to meet in executive session on April 12, 1962.

TRADE POLICY EFFECTS ON UNEMPLOYMENT: H. R. 10861 (Baker) introduced in the House on Mar. 21,

1962, to assist in alleviating the effects of unemployment resulting from Federal tariff or trade policy by establishing a temporary program of supplementary grants for States which provide for liberalization of

their unemployment compensation payments to persons unemployed because of Federal tariff or trade policy; referred to the Committee on Ways and Means.



SPRING IS SMELT TIME

"The smelt are running" is the spring cry of people fortunate enough to live in the Great Lakes area. Professionals and amateurs--old and young--men and women--join in the sport of smelt dipping.

The smelt of the Great Lakes area leave the lakes and throng into the tributary streams to spawn as soon as the ice breaks up in the spring. Coming up the rivers in unbelievable numbers, their glittering bodies darken the water. Hundreds of people line the banks waiting to scoop them up. The dipping continues throughout the night, with bonfires and lanterns on the river banks gaily illuminating the scene.

Not the outdoor type--if so, do your dipping at your local market. You will find these tiny delectable fish, about 10 to 12 to the pound, either fresh or frozen, just waiting to be enjoyed by you and your family.

Either way you do your dipping, the home economists of the U. S. Bureau of Commercial Fisheries suggest the following kitchen-tested recipe to aid you in cooking your catch.

BAKED SMELT

3 pounds whole smelt, fresh or frozen	2 tablespoons lemon juice
1 teaspoon salt	1/2 teaspoon grated onion
Dash pepper	1/4 cup butter or other fat,
1 teaspoon papriks	melted

Thaw frozen fish. Dress fish by removing entrails. Wash and drain on absorbent paper. Place in a single layer in a well-greased baking pan. Combine remaining ingredients and pour over fish. Bake in a moderate oven, 350° F., for 20 to 25 minutes or until fish flakes easily when tested with a fork. Serves 6.



Editorial Assistant--Ruth V. Keefe

Compositors--Jean Zalevsky, Alma Greene, Helen Paretti, and Raie Carron

* * * * *

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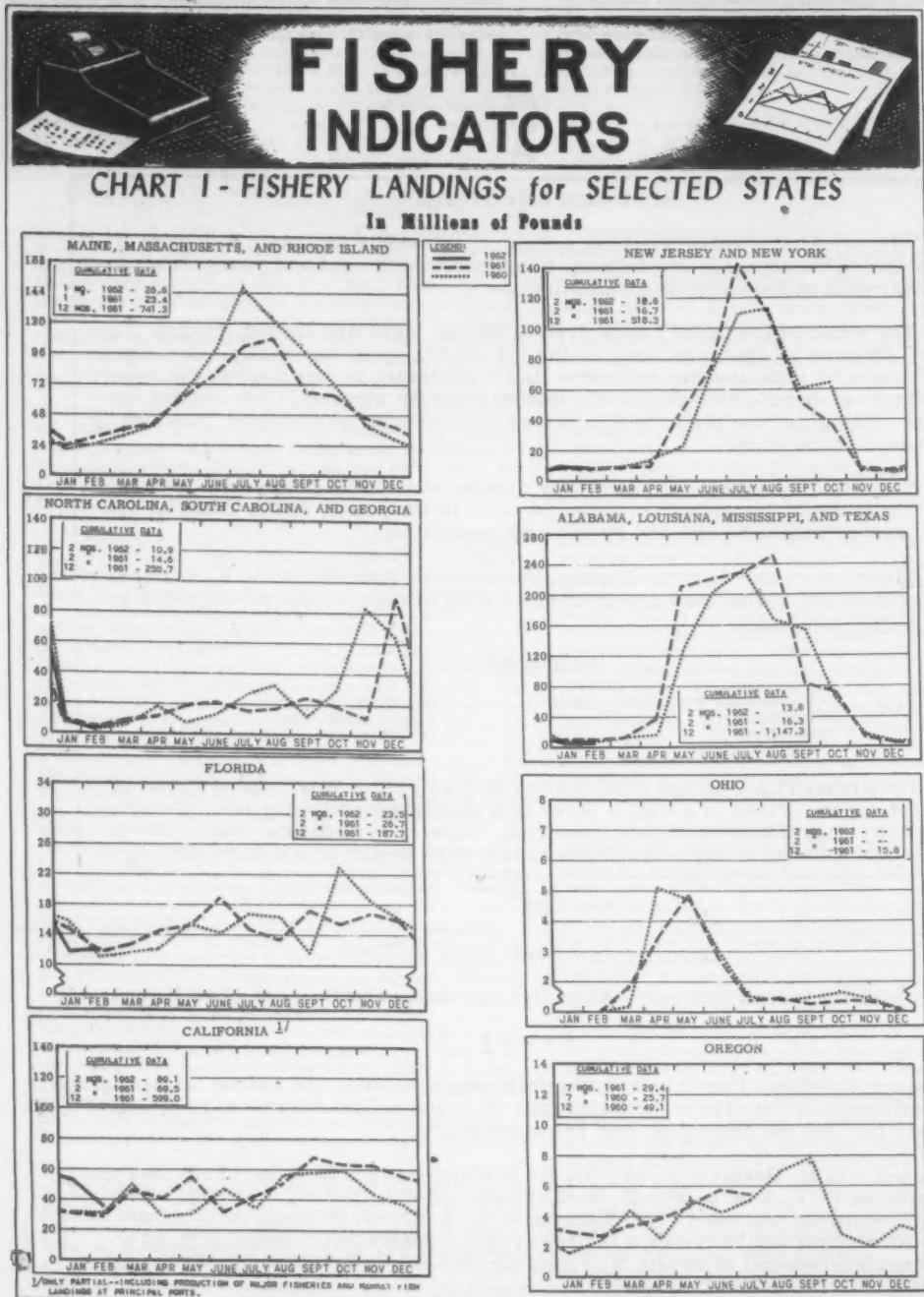
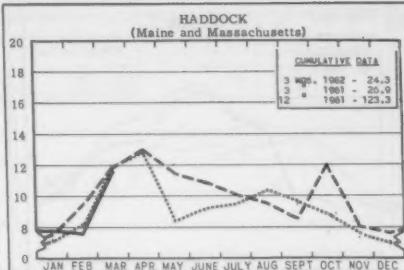
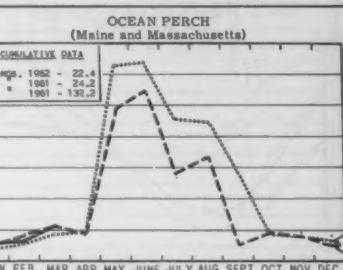


CHART 2 - LANDINGS for SELECTED FISHERIES

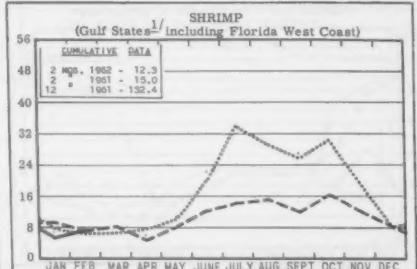
In Millions of Pounds



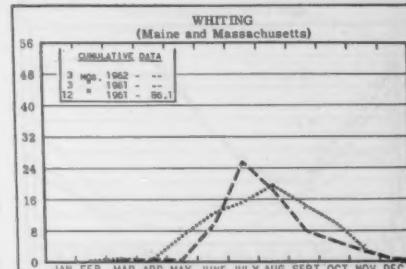
LEGEND:
— 1952
- - - 1951
• • • 1950



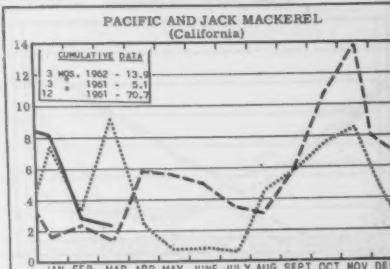
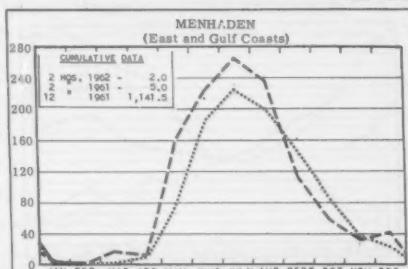
In Millions of Pounds



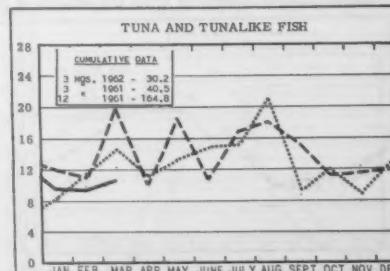
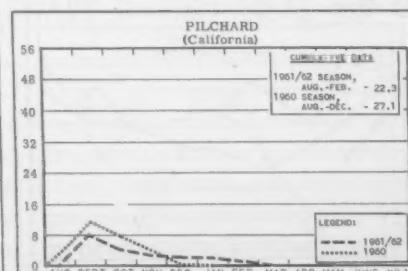
^{1/}L.I. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.



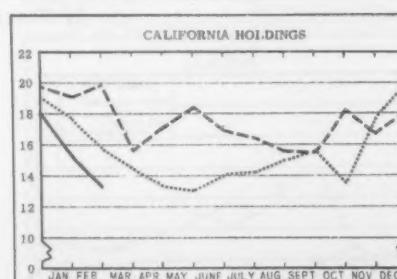
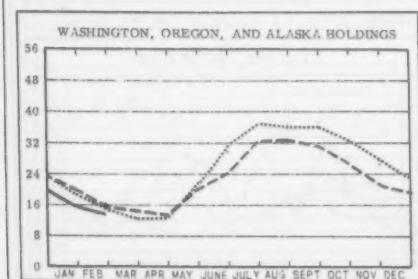
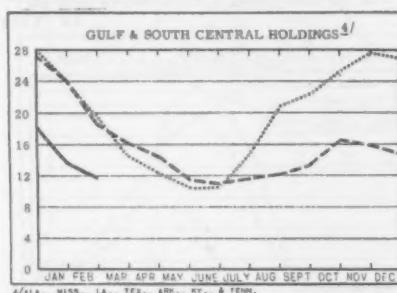
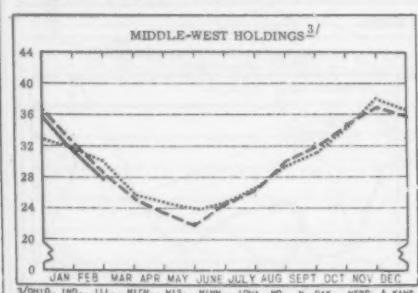
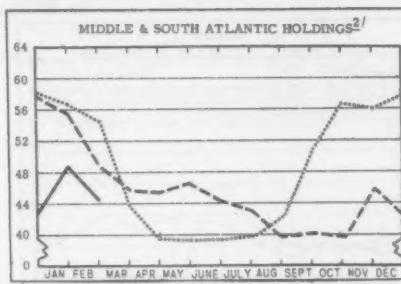
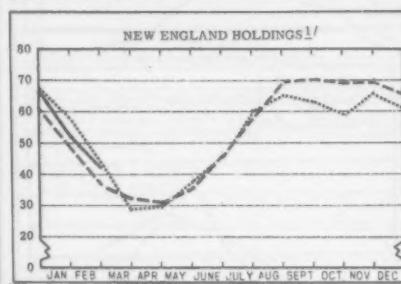
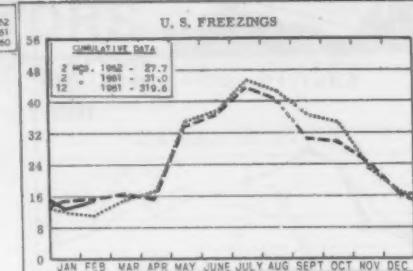
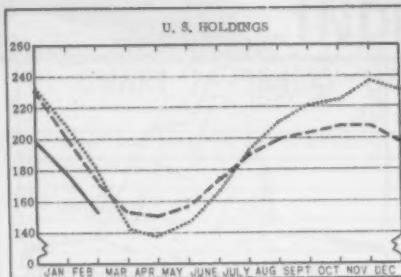
In Thousands of Tons



In Thousands of Tons



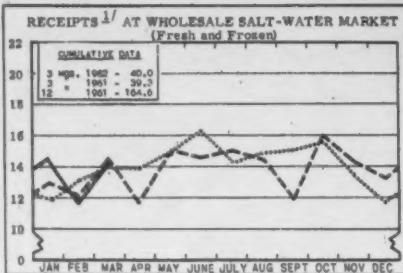
**CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS
of FISHERY PRODUCTS ***
In Millions of Pounds



* Excludes salted, cured, and smoked products.

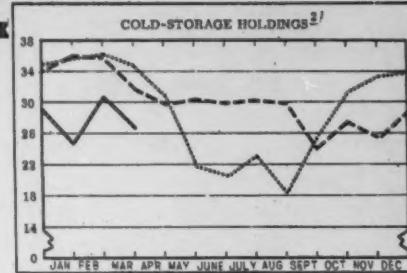
CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

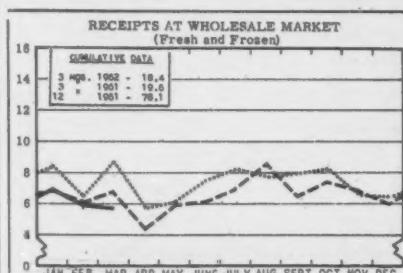


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

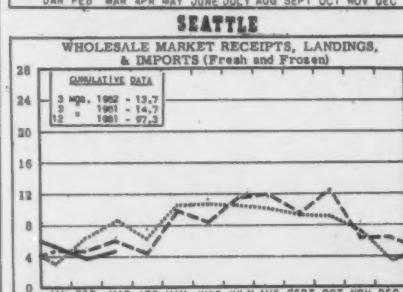
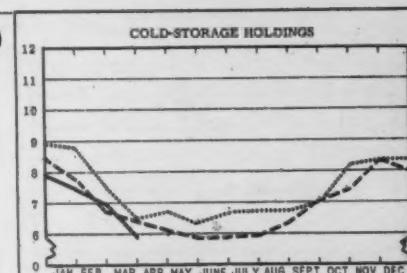
NEW YORK CITY



^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



SEATTLE

LEGEND

- 1962
- - - 1961
- ... 1960

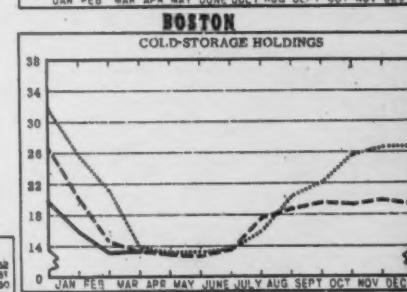


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

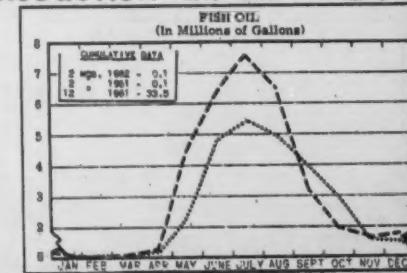
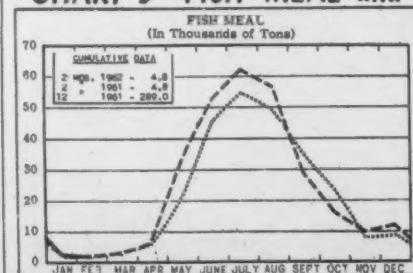
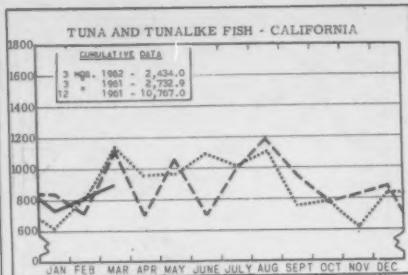
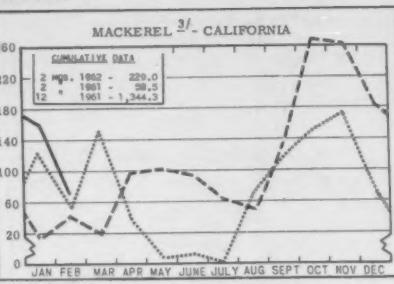


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

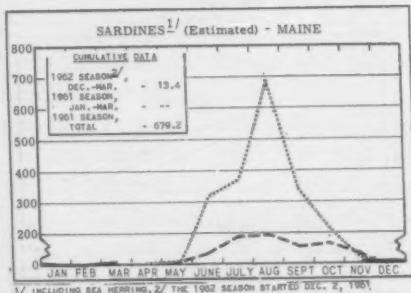
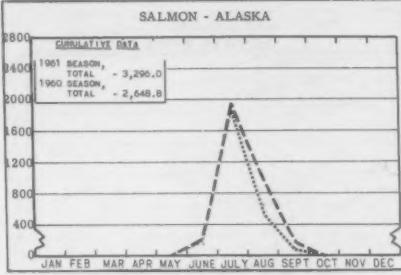
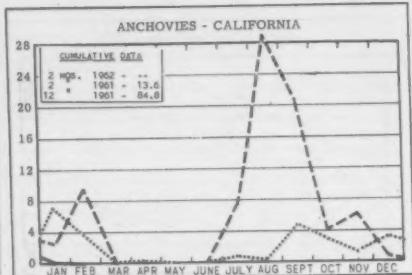
In Thousands of Standard Cases



LEGEND:
— 1962
- - - 1961
.... 1960

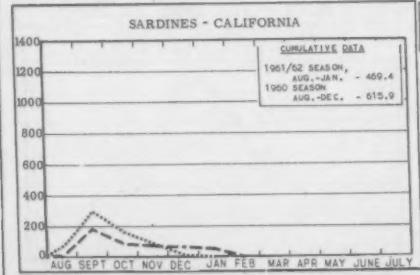


^{3/} INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



^{1/} INCLUDING SEA HERRING. ^{2/} THE 1962 SEASON STARTED DEC. 2, 1961.

STANDARD CASES				
Variety	No. Cans	Designation	Net Wgt.	
SARDINES.....	100	½ drawn	3 ½	oz.
SHRIMP.....	48	--	5	oz.
TUNA.....	48	# ½ tuna	6 & 7	oz.
PILCHARDS...	48	# 1 oval	16	oz.
SALMON.....	48	1-lb. tall	16	oz.
ANCHOVIES...	48	½-lb.	8	oz.



LEGEND:
— 1961/62
.... 1960/61

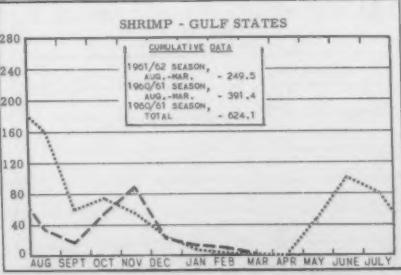
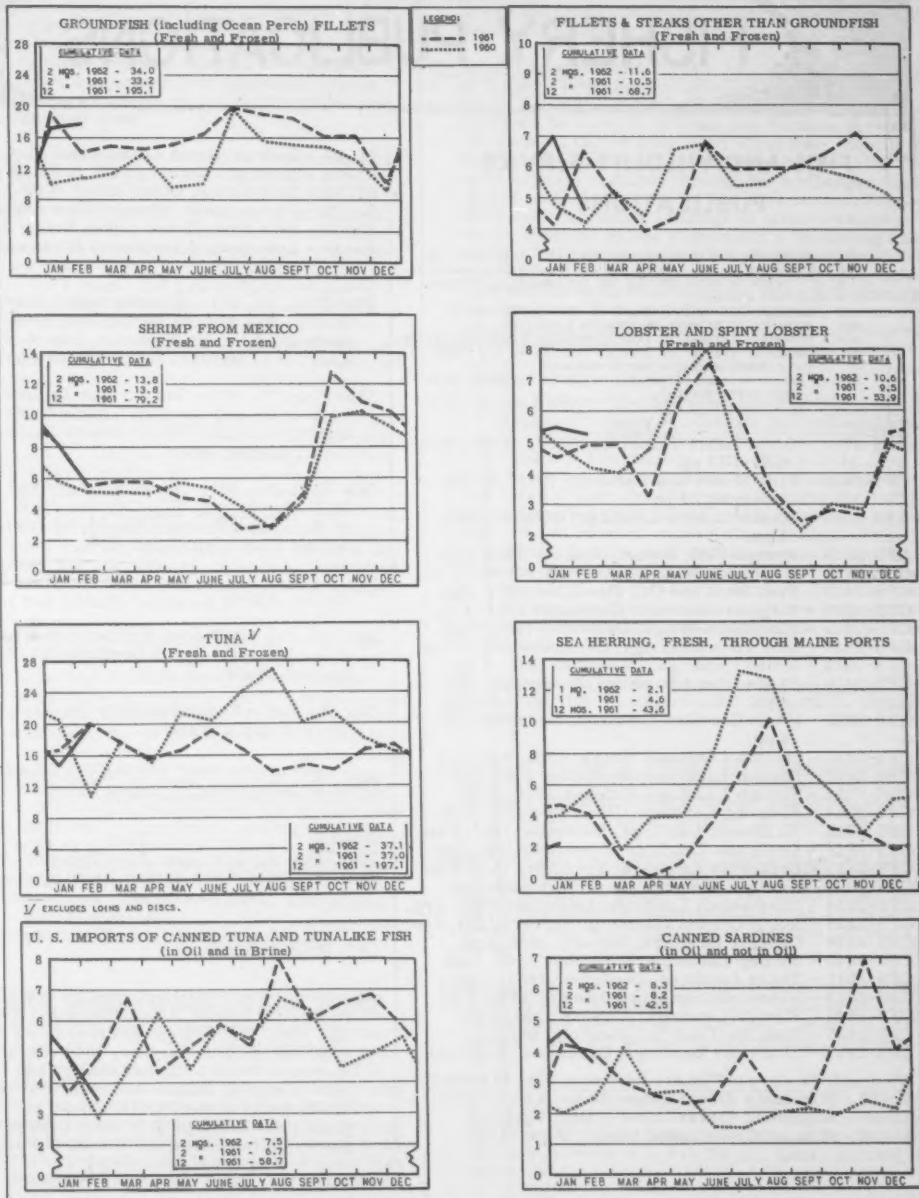


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE
BUREAU OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON,
D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
- MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
- SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
- SL - BRANCH OF STATISTICS LIST OF DEALERS IN AND PRODUCERS
OF FISHERY PRODUCTS AND BYPRODUCTS.
- SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-2796	- Great Lakes Fisheries, 1960, Annual Summary, 13 pp.
CFS-2800	- Fish Sticks and Portions, 1961, Annual Summary, 3 pp.
CFS-2806	- Massachusetts Landings, October 1961, 5 pp.
CFS-2810	- Frozen Fish Report, January 1962, 8 pp.
CFS-2811	- Michigan Landings, December 1961, 2 pp.
CFS-2813	- Fish Meal and Oil, December 1961, 4 pp.
CFS-2814	- Virginia Landings, December 1961, 4 pp.
CFS-2815	- Florida Landings, December 1961, 8 pp.
CFS-2816	- New York Landings, December 1961, 5 pp.
CFS-2818	- Maine Landings, December 1961, 4 pp.
CFS-2819	- Rhode Island Landings, December 1961, 3 pp.
CFS-2820	- North Carolina Landings, December 1961, 4 pp.
CFS-2821	- Shrimp Landings, August 1961, 6 pp.
CFS-2822	- Shrimp Landings, September 1961, 6 pp.
CFS-2823	- Shrimp Landings, October 1961, 6 pp.
CFS-2824	- Alabama Landings, December 1961, 3 pp.
CFS-2825	- Minnesota Landings, December 1961, 2 pp.
CFS-2826	- Louisiana Landings, November 1961, 2 pp.
CFS-2827	- California Landings, November 1961, 4 pp.
CFS-2828	- Georgia Landings, December 1961, 2 pp.
CFS-2834	- Mississippi Landings, December 1961, 2 pp.
CFS-2835	- North Carolina Landings, January 1962, 3 pp.
CFS-2836	- Georgia Landings, January 1962, 2 pp.
CFS-2840	- Shrimp Landings, November 1961, 6 pp.
CFS-2841	- Texas Landings, December 1961, 3 pp.
CFS-2842	- Wisconsin Landings, January 1962, 2 pp.
CFS-2843	- Florida Landings, January 1962, 8 pp.
CFS-2845	- Fish Meal and Oil, January 1962, 2 pp.
CFS-2847	- Louisiana Landings, December 1962, 2 pp.
Wholesale Dealers in Fishery Products, 1961 (Revised):	
SL-24	- Minnesota (Great Lakes Area), 1 p.
SL-25	- Wisconsin (Great Lakes Area), 4 pp.
SL-26	- Illinois (Great Lakes Area), 2 pp.
SL-27 - Indiana (Great Lakes Area), 1 p.	
SL-28 - Michigan (Great Lakes Area), 4 pp.	
SL-29 - Ohio (Great Lakes Area), 3 pp.	
SL-30 - Pennsylvania (Great Lakes Area), 1 p.	
SL-31 - New York (Great Lakes Area), 2 pp.	
SL-47 - Louisiana (Mississippi River and Tributaries), 1 pp.	
SSR-Fish. No. 381 - Oceanographic Observations in Bristol Bay and the Bering Sea, 1939-41, USCST Redwing, by Felix Favorite, John W. Schantz, and Charles R. Hebard, 326 pp., illus., July 1961.	
SSR-Fish. No. 385 - Sea Surface Temperature Monthly Average and Anomaly Charts Northeastern Pacific Ocean, 1947-58, by James H. Johnson, 58 pp., illus., August 1961.	
SSR-Fish. No. 393 - Menhaden Eggs and Larvae from M/V Theodore N. Gill Cruises, South Atlantic Coast of the United States, 1953-54, by John W. Reintjes, 10 pp., illus., September 1961.	
Sep. No. 644 - Machines Solve Handling Problems in Oyster Plants.	
Sep. No. 645 - Effect of Butylated Hydroxy Toluene and Potassium Sorbate on Development of Rancidity in Smoked Mullet.	
Sep. No. 646 - Equipment Note No. 11 - A Great Lakes Stern-Ramp Trawler.	
THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.	
Number	Title
MNL-68	- Japan's Agar-Agar Industry, 9 pp.
MNL-67	- Fisheries Survey Reports--Ivory Coast and Dahomey, 6 pp.
THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.	
Halibut and Troll Salmon Landings and Ex-Vessel Prices for Seattle, Alaska Ports and British Columbia, 1961-1960, 35 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., Seattle 4, Wash.) Gives landings and ex-vessel prices of troll salmon and halibut at leading United States ports of the Pacific Coast; ex-vessel halibut prices and landings at leading British Columbia ports; United States and Canadian Pacific Coast	

halibut landings, 1937-1961; Seattle season averages of ex-vessel halibut prices, 1952-1961; and troll salmon landings and receipts at Seattle and Alaskan ports, with comparative data.

(Baltimore) Monthly Summary--Fishery Products, January 1962, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, February 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, January and February 1962, 8 pp., each. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the months indicated.

New England Fisheries--Monthly Summary, January and February 1962, 22 pp., each. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial-fish landings and ex-vessel prices; imports; cold storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the months indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--December 1961, 24 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and freshwater sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, February 1962, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, February 1962, 6 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, January 1962, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Abundance and Age of Kvichak River Red Salmon Smolts, by Orra E. Kerns, Jr., Fishery Bulletin 189 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 24 pp., illus., printed, 20 cents, 1961.

Abundance and Distribution of Eggs and Larvae and Survival of Larvae of Jack Mackerel (*TRACHURUS SYMETRICUS*), by David A. Farris, Fishery Bulletin 187 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 36 pp., illus., printed, 30 cents, 1961.

Calanoid Copepods from Equatorial Waters of the Pacific Ocean, by George D. Grice, Fishery Bulletin 186 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61) 80 pp., illus., printed, 45 cents, 1961.

Distribution and Abundance of Skipjack in the Hawaii Fishery, 1952-53, by Herbert H. Shippin, Fishery Bulletin 188 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 24 pp., illus., printed, 20 cents, 1961.

Early Developmental Stages of Pink Shrimp, PENAEUS DUORARUM, from Florida Waters, by Sheldon Dobkin, Fishery Bulletin (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), pp. 321-349, illus., printed, 30 cents, 1961.

Serological Studies of Atlantic Redfish, by Carl J. Sindermann, Fishery Bulletin 191 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 8 pp., printed, 15 cents, 1961.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALGAE:

An Introductory Account of the Smaller Algae of British Coastal Waters. Part VIII - Euglenophyceae-Euglenineae, by R. W. Butcher, Fishery Investigations Series IV, 23 pp., illus., printed, 12s. 6d. (about US\$1.75). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England.

ANADROMOUS FISH:

Seasonal Races Among Anadromous Fishes, by V. A. Abakumov, Translation Series No. 353, 19 pp., processed. (Translated from the Russian, Voprosy Ikhtioligi, No. 17, 1961, pp. 179-190.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B.C., Canada, 1961.

ANGOLA:

Contribuicao para o Estudo da Pesca de Arrasto em Angola - Cartas Provisorias da Pesca de Arrasto da Costa de Angola (Contribution to the Study of Fish Trawling in Angola - Preliminary Charts of Trawling Areas Along the Coast of Angola), by Pedro da Franca, Fernando Correia da Costa, and Henrique Serpa de Vasconcelos, Notas Mimeografadas do Centro de Biologia Piscatoria No. 24, 22 pp., 9 charts, processed in Portuguese. Centro de Biologia Piscatoria, Ministerio do Ultramar, Junta de Investigacoes do Ultramar, Lisbon, Portugal, 1961.

ANTIFOULING PAINTS:

Mechanism of Antifouling Action in Shipbottom Paints, by Charles E. Lane and Francis J. Bernard, Final Report No. 62-1, 13 pp., processed. The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

AQUARIUM FISH:

Studies on the Relationship Between Sexual Maturation and Growth in LEBISTES, by Gunnar Svartson, Translation Series No. 126, 35 pp., illus., processed. (Translated from the German, Meddelander fran Statens Undersoknings-Och Forsoksanstalt for Sotvattenfisket, No. 21, 1943, pp. 1-48.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B.C., Canada, 1959.

ARAL SEA:

The Effect of the Fishery on the Productivity of Bream Stocks of the Aral Sea, by E. A. Bervald, Translation

Series No. 354, 16 pp., illus., processed. (Translated from the Russian, Voprosy Ikhtioligi, No. 7, 1956, pp. 21-32.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B.C., Canada, 1961.

BARNACLES:

Absorption and Excretion of Copper Ion During Settlement and Metamorphosis of the Barnacle, BALANUS AMPHITRITE NIVEUS, by Francis J. Bernard and Charles E. Lane, 11 pp., illus., printed. (Reprinted from Biological Bulletin, vol. 121, no. 3, December 1961, pp. 438-448.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

BELGIUM:

"La Peche Belge en 1961: 46,365 Tonnes" (Belgian Fisheries in 1961: 46,365 Tons), by V. Van der Kimp, article, La Peche Maritime, No. 1007, February 1962, pp. 81-82, printed in French. La Peche Maritime, 180 Boulevard Haussmann, Paris, France.

CANADA:

Annual Report of the Fisheries Research Board of Canada, 1960/61 (For the Fiscal Year Ended March 31, 1961), 193 pp., illus., printed in English with additional introduction in French, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1961. A comprehensive summary of the work of the Fisheries Research Board of Canada and its field stations during 1960/61. The research work of the Board is divided into three principal branches: research in aquatic biology with emphasis on fishery biology, research in fishery technology, and research in oceanography. The Board's 177-foot research vessel A. T. Cameron continued to serve as a very valuable research "tool" and is making possible the gathering of information on populations of Northwest Atlantic species of fish of particular importance to the fishing industry. Oceanographic studies in Atlantic, Arctic, and Pacific waters are described. Detailed reports cover activities of the Board's biological and technological stations. A list of the publications and reports published during 1960 by the Board is included.

British Columbia Catch Statistics, 1961 (By Area and Type of Gear), 164 pp., illus., processed. Department of Fisheries of Canada, 1110 W. Georgia St., Vancouver 5, B.C., Canada, February 2, 1962. The eleventh annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. The report is divided into three sections: (1) summary of landings by district and total landed value of all fish; (2) highlights of catch statistics--a general review of significant events of salmon fishing in each area and general review for other types of fish; and (3) detailed district and area monthly statistics by type of gear. Certain economic, weather, and conservation factors that have a bearing on the catch are also reviewed.

The Canadian Fish Culturist, Issue 29, November 1961, 42 pp., illus., printed. Director, Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Contains the following articles: "Fish Ponds in Canada--a Preliminary Account," by M. W. Smith; "Vital Statistics of Trout Populations in New York Farm Ponds," by Alfred W. Eipper; "A Review of Farm Trout Ponds in Southern Ontario," by H. R.

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McCrimmon: "The Genetics of Selection in a Fish Population," by L. Butler; "Selectivity and Hybridization in Management of Fish Stocks," by S. B. Smith; and "The Effects of Underwater Explosions on Yellow Perch," by R. G. Ferguson. The articles were among the papers presented at a symposium on "Farm Fish Ponds as a Technique of Fishery Management," at the fourteenth meeting of the Canadian Committee on Freshwater Fisheries Research, under the sponsorship of the Fisheries Research Board of Canada.

Journal of the Fisheries Research Board of Canada, vol. 18, no. 6, December 1961, pp. 893-1778, illus., printed, \$1.50. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "Proximate Composition of Canadian Atlantic Fish. III--Sectional Differences in the Flesh of a Species of Chondrostei, one of Chimaerae, and of Some Miscellaneous Teleosts," by D. I. Fraser, A. Mannan, and W. J. Dyer; "On the Chemical Composition of Eleven Species of Marine Phytoplankters," by T. R. Parsons, K. Stephens, and J. D. H. Strickland; "On the Pigment Composition of Eleven Species of Marine Phytoplankters," by T. R. Parsons; "Some Oceanographic Features of Juan de Fuca Strait," by R. H. Herlinveaux and J. P. Tully; "Order of Succession of Different Types of Infraoral Lamina in Landlocked Sea Lamprey (*Petromyzon marinus*)," by V. D. Vladykov and G. N. Mukerji; "Ocean Temperatures and Their Relation to Albacore Tuna (*Thunnus germo*) Distribution in Waters off the Coast of Oregon, Washington, and British Columbia," by Dayton L. Alverson; and "Diving and Photographic Techniques for Observing and Recording Salmon Activities," by D. V. Ellis.

Journal of the Fisheries Research Board of Canada, vol. 19, no. 1, January 1962, pp. 1-171, illus., printed, \$1.50, Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "Physical Characteristics and Chemical Composition of Two Subspecies of Lake Trout," by Claude E. Thurston; "The Pollett Apron Seine," by P. F. Elson; "Hydrographic and Meteorological Factors Affecting Shellfish Toxicity at Head Harbour, New Brunswick," by A. Prakash and J. C. Medcof; "Growth and Reproduction of the Longnose Sucker, *Catostomus catostomus* (Forster), in Great Slave Lake," by Roy H. D. Harris; "Preliminary Studies on the Visible Migrations of Adult Salmon," by D. V. Ellis; "Radioactive Caesium as a Fish and Lamprey Mark," by D. P. Scott; and "Fat Hydrolysis in Frozen Fillets of Lingcod and Pacific Gray Cod," by J. D. Wood and S. A. Haqq.

Regulations Respecting the Construction and Inspection of Fishing Vessels Exceeding Eighty Feet Registered Length (P.C. 1956--1077 of July 12th, 1956, Amended by P.C. 1956--1403 of September 13th, 1956), 43 pp., printed, 50 Canadian cents. Queen's Printer, Ottawa, Canada, 1962.

CANNING MACHINERY:

Machine for Close Packing of Small Fish into Cans, by M. A. Danilov and L. F. Gerasimenko, patent described in Byulleten' Izobreteniy, No. 7, 1959, p. 69, printed. Byulleten' Izobreteniy, c/o Mezhdunarodnaia Kniga, Moscow 200, U.S.S.R.

CUBAN SNAPPER:

LUTIANUS AMBIGUUS, by Zeida Rodriguez Pino, Contribution No. 14, 19 pp., illus., printed. Centro de Investigaciones Pesqueras del Departamento de Pesca del Instituto Nacional de Reforma Agraria, Playa Habana, Bauta, Cuba, November 1961.

DOG FISH:

A Method of Determining the Age and the Composition of the Catches of the Spiny Dogfish (SQUALUS ACANTHIAS L.), by S. Kaganovskaya, Translation Series No. 281, 3 pp., processed. (Translated from the Russian, Vestnik Dalnevostochno Filial Akademii Nauk SSSR for 1933, No. 1-3, 1933, pp. 139-141.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

EXPORTS:

Preparing Shipments to the United Kingdom, WTIS Part 2, Operations Report No. 62-6, 8 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report giving information on the preparation of shipments for export to the United Kingdom. It covers the preparation of shipping documents, information on labeling and marking, customs procedures, and related subjects.

FISH POPULATION:

Concerning the Influence of Exploitation on the Structure of the Population of a Commercial Fish, by G. V. Nikolsky, Translation Series No. 280, 26 pp., illus., processed. (Translated from the Russian, Zoologicheskii Zhurnal, vol. 37, no. 1, 1958, pp. 41-56.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

FOOD AND AGRICULTURE ORGANIZATION:

Regional Fisheries Advisory Commission for the South West Atlantic, Note by Director-General, C61/LIM/8, 9 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, November 4, 1961.

Report--Technical Committee on Fisheries (FAO Conference), C 61/FI/6/Rev. 1, 15 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, November 10, 1961.

FOREIGN TRADE:

Licensing and Exchange Controls--Brazil, WTIS Part 2, Operations Report No. 61-93, 8 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

Licensing and Exchange Controls--Ecuador

WTIS Part 2, Operations Report No. 61-94, 4 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

FRANCE:

"Decree No. 60-1524 on the Control of Manufacture of Canned and Semi-Preserved Fish, Shellfish and Oth-

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er Marine Animals." *Food and Agricultural Legislation*, vol. X, no. 2, December 30, 1960, France, XVII/2, 8 pp., printed, \$1. Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.

FUR SEALS:

"Fur over Alaskan Seals," article, *Business Week*, no. 1693, February 10, 1962, pp. 60, 62, 64, illus., printed. *Business Week*, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. Discusses the cancelling of the exclusive contract for processing Alaska fur seal skins held by a St. Louis firm. The United States Department of the Interior manages the seal herd on the Pribilof Islands under the terms of a 1911 treaty, and in return takes 70 percent of the harvest. The company has had a contract to process and sell all U. S. Alaskafur seal skins for 40 years. However, this contract is to be cancelled effective December 31, 1962.

GENERAL:

Fishing News International, vol. 1, no. 2, January 1962, 120 pp., illus., printed, single copy 6s. 6d. (about 91 U. S. cents). *Fishing News International*, Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London EC4, England. Includes among others, these articles: "Focus on Japan," by Kozo Kitahara; "Fish Culture and the World's Protein Needs," by B. Havings; "Role of Fisheries Nutrition in the Pacific Area," by Georg Borgstrom; "Trading in Fish under Stockholm Convention;" "Decline of British Herring Fisheries in the North Sea," by B. B. Parrish; "Preservation by Antibiotics and Penetrating Radiations. II," by H. L. A. Tarr; "Determining Optimum Speed for Trawlers," by Bo-gucki and J. Swiecki; "Production Specifications for Concentrated Fish Protein;" "Migrating Tuna;" "Midwater Trawling," by A. von Brandt; "Handling the Catch. 2-Mechanical Unloading," by Jan. F. Minnee; "Ocean--Unique Stern Trawler from a French Design," by M. Jollant and D. E. F. Vickers; "Multi-Purpose Cod Liver Oil--Food, Medicine, and Nutrient," and "The Fisheries Division of the Food and Agriculture Organization."

GHANA:

"Ghana Leads Africa with New Fishing Fleet," article, *World Fishing*, vol. 11, no. 2, February 1962, pp. 24-29, illus., printed, single copy 3s. (about 42 U. S. cents). *World Fishing*, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. Describes the first of four tuna purse-seiners to be commissioned for the Ghanaian Government, which will fish for tuna, hake, John Dory, ocean perch, and other species on the continental shelf. Technical assistance has been rendered by United States and British interests. A cold-storage plant is being constructed and later a cannery will be built. The four vessels, in addition to stern trawlers, worth nearly US\$2.8 million, will lay the foundation of a modern fishing fleet which the Ghana Government will operate from the port of Tema:

ICELAND:

Verzlinarskyslur Arid 1960 (External Trade 1960), 219 pp., printed in Icelandic with contents in English, 35 kroner (about 80 U. S. cents). Statistical Bu-

reau of Iceland, Reykjavik, Iceland, 1961. Details and statistical data on fishery exports are included.

INTERNATIONAL COMMISSIONS:

International Commission for the Northwest Atlantic Fisheries, Statistical Bulletin for the Year 1959, vol. 9, 70 pp., illus., printed. International Commission for the Northwest Atlantic Fisheries, Halifax, N. S., Canada, 1961. This bulletin is divided into two parts: Part 1 summarizes statistics on fishery landings in the Convention Area 1952-1959; and Part 2 includes statistical tables dealing with the fisheries in 1959. The presentation of the basic statistical data again has been designed to place emphasis on area and month of fishing. Contains a summary of all landings by species group, country, and statistical subdivision; landings of cod, haddock, ocean perch, halibut, and flounder for each type of gear; landings of each species by subarea; and fishing effort and landings by country, gear, and subarea.

INTERNATIONAL CONFERENCES:

Participation of the United States Government in International Conferences (July 1, 1959-June 30, 1960), Publication 7043, 270 pp., illus., printed, 65 cents. Office of International Conferences, Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Describes, among others, the following conferences: Law of the Sea Conference (London, Nov. 16-18, 1959); Second Conference on the Law of the Sea (Geneva, Mar. 17-Apr. 26, 1960); International Conference on Safety of Life at Sea (London, May 17-June 17, 1960); Third Caribbean Fisheries Seminar (St. Maarten, July 3-9, 1959); Inter-American Tropical Tuna Commission, Twelfth Annual Meeting (San Jose, Feb. 23-24, 1960); International North Pacific Fisheries Commission, Sixth Annual Meeting (Seattle, Nov. 2-7, 1959)--Committee on Biology and Research (Seattle, Oct. 19-26, 1960)--Working Party on the Distribution of Salmon in the High Seas (Tokyo, May 25-July 19, 1960)--Working Party on Long-Term Research Plans (Tokyo, June 6-17, 1960)--Editorial Committee (Tokyo, June 6-17, 1960)--Ad Hoc Committee on Abstention: Scientific Committee (Vancouver, Oct. 12-17, 1959); International Commission for the Northwest Atlantic Fisheries: Tenth Annual Meeting (Bergen, May 30-June 3, 1960)--Standing Committee on Research and Statistics and Sub-committees (Bergen, May 23-June 3, 1960); North Pacific Fur Seal Commission: Third Meeting (Moscow, Jan. 25-27, 1960); International Council for the Exploration of the Sea: Forty-seventh Annual Meeting (Copenhagen, Oct. 5-10, 1959); and International Whaling Commission: Twelfth Annual Meeting (London, June 20-24, 1960). Publication of this bulletin is being discontinued with this issue.

LAMPREYS:

The Damage Done by Lampreys to Fish Stocks, by V. A. Abakumov, Translation Series No. 274, 2 pp., processed. (Translated from the Russian, *Rybnoe khoziaistvo*, vol. 35, no. 4, 1959, pp. 32-33.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

MARINE SCIENCE:

Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 4, December 1961, pp. 483-649, illus.,

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printed, single copy \$2. Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla. (For sale by University of Miami Press, Coral Gables, Fla.) Contains, among others, the following articles: "Normal Stages of the Early Development of the Flying Fish, *Hirundichthys affinis* (Günther)," by John W. Evans; "Charting the Marine Environment of St. John, U. S. Virgin Islands," by Herman E. Kumpf and Helen A. Randall; and "A Checklist of the Flora and Fauna of Northern Florida Bay and Adjacent Brackish Waters of the Florida Mainland Collected during the Period July 1957 through September 1960," by Durbin Tabb and Raymond B. Manning.

NEW JERSEY:

Annual Report of Division of Fish and Game (For the Fiscal Year Commencing July 1, 1960, and Ending June 30, 1961), 61 pp., illus., printed. Division of Fish and Game, Department of Conservation and Economic Development, Trenton, N. J. The many and diverse activities and accomplishments covered in this report reflect broader concepts in New Jersey fish and game management. Included, among others, is a report on the Bureau of Fisheries Management, commercial fishing and landings for 1960 in New Jersey, fish catch by pound nets, and data on the Hudson and Delaware River shad industries.

NORWAY:

"Fiskernes Arsinntekter i 1960" (Annual Report on Fishermen in 1960), article, Fiskets Gang, vol. 48, no. 8, February 22, 1962, pp. 103-115, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Norges Fiskerier 1961" (Norway's Fisheries, 1961), article, Fiskets Gang, vol. 47, no. 52, December 28, 1961, pp. 806-808, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"The Norwegian Canning Industry in 1961," article, Tidsskrift for Hermetikindustri, vol. 48, no. 1, January 1962, pp. 11-14, printed in English and Norwegian. Tidsskrift for Hermetikindustri (Norwegian Canners Export Journal), Stavanger, Norway. Gives statistical data on the canning of kippered herring, brisling, small sild, and other products in 1961, and the quantity and value of exports. Also discusses the EFTA agreement and the need for Norway to become a member of the Common Market.

"Norwegian Purse-Seiners Did Well in 1961," article, World Fishing, vol. 11, no. 2, February 1962, pp. 44, 47, illus., printed, single copy 3s. (about 42 U. S. cents). World Fishing, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. When the winter herring fishery failed, Norwegian purse-seiners diverted their efforts to catching capelin, fat and small herring, and cod. Landings for most species except winter herring during 1961 exceeded those of previous years.

"Rapport om Makrell- og Habrannundersokelser med f/f Peder Ronnestad i Skagerak-Nordsjøen, 4-30 October 1961" (Report on Mackerel and Shark Investigation of the Peder Ronnestad in Skagerak-North Sea, October 4-30, 1961), by Arne Revheim,

article, Fiskets Gang, vol. 48, no. 6, February 1962, p. 74, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway

"Smalsild- og Feitsildtøkt med f/f G. O. Sars i Tiden 30 August til 28 September 1961" (Small Herring and Fat Herring Cruise of the Research Vessel G. O. Sars during the Period August 30-September 28, 1961), by Olav Dragesund and Per Hognestad, article, Fiskets Gang, vol. 48, no. 1, January 4, 1962, pp. 6-9, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Stortralernes Lonnsonhet i 1960" (Profit from Operating Large Trawlers in 1960), article, Fiskets Gang, vol. 47, no. 51, December 21, 1961, pp. 783-797, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Transport av Levende Fisk i Bronnbatter" (Transportation of Live Fish in a Vessel Provided with a Tank Containing Sea Water), by F. Kjelstrup-Olsen and G. Sundnes, article, Fiskets Gang, vol. 47, no. 49, December 7, 1961, pp. 760-761, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

OCEANOGRAPHY:

Geological and Geophysical Progress Report, January 18, 1962 (Unpublished Manuscript), 5 pp., processed. National Oceanographic Data Center, Washington, D. C.

Oceanographic Cruise Report USC & GS Ship EXPLORER, 1960 (Seattle, Washington, to Norfolk, Virginia, February 2-April 27, 1960), 162 pp., illus., printed, \$3. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., or any U. S. Department of Commerce Field Office. Contains data, including charts, maps, and illustrations, obtained during the February-April 1960 oceanographic expedition of the USC & GS ship Explorer, together with results from analyses of those data.

"Oceanography in Latin America," article, Nature, vol. 193, no. 4817, February 24, 1962, pp. 731-732, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

Progress Report on Bathymeterogram Problems, January 18, 1962 (Unpublished Manuscript), 7 pp., processed. National Oceanographic Data Center, Washington, D. C.

Quality Control Procedures--Physical and Chemical Data (Unpublished Manuscript), 7 pp., processed. National Oceanographic Data Center, Washington, D. C.

Tentative Plans for NODC Bathymeterograph Production (Unpublished Manuscript), 7 pp., processed. National Oceanographic Data Center, Washington, D. C.

OREGON:

Research Briefs, vol. 8, no. 1, August 1961, 79 pp., illus., printed. Fish Commission of Oregon, 307 State Office Bldg., Portland 1, Oreg. Contains among others, articles on "The Oregon Trawl Fishery for Mink Food--1948-1957," by Walter G. Jones and

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

George Y. Harry, Jr.; "Biological Observations and Results of the 1960 John N. Cobb Exploratory Shrimp Cruise Off the Central Oregon Coast," by Lael L. Ronholt and Austin R. Magill; "Sixth Progress Report on Salmon Diet Experiments," by Russell O. Sinnhuber and others; "Seventh Progress Report on Salmon Diet Experiments," by Duncan K. Law and others; "Occurrence of the California Halibut in Oregon Waters," by Charles D. Snow and Raymond N. Breuser; "Two Diseases New to Adult Pacific Salmon," by James W. Wood; and "Chinook and Silver Salmon Spawning Together," by Raymond N. Breuser.

OYSTERS:

"Direct Observation of Spawning in the Blacklip Pearl Shell Oyster (*Pinctada margarifera*) and the Thorny Oyster (*Spondylus* sp.)" by J. S. Bullivant, article, *Nature*, vol. 193, no. 4816, February 17, 1962, pp. 700-701, illus., printed. *Nature*, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

PARASITES:

The Parasite Fauna and the Species Relationships of the Kamchatka Azabach, *ONCORHYNCHUS NERKA* *infrasp.* ASABATCH Berg 1932, by A. Kh. Akhmetrov, Translation Series No. 283, 4 pp., processed. (Translated from the Russian, *Doklady Akademii Nauk SSSR*, vol. 94, no. 5, 1954, pp. 969-971.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

Zoogeographical Analysis and a Hypothesis of the Origin of the Helminth Fauna of the Vertebrates of Sakhalin, by A. I. Krotov, Translation Series No. 334, 13 pp., processed. (Translated from the Russian, *Zoologicheskii Zhurnal*, vol. 39, no. 4, 1960, pp. 481-489.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

PHILIPPINES:

The Philippine Journal of Fisheries, vol. 6, no. 1, January-June 1958, 105 pp., illus., printed. Agricultural Information Division, Department of Agriculture and Natural Resources, Quezon City, Philippines. Includes, among others, these articles:

"The Propagation of the Grey Mullet in Northern Luzon Brackish-Water Fishponds," by Guillermo J. Blanco and Pascual A. Acosta; "Kapis (Pearl Oyster) Farming at the Tidal Flats of Bacoor Bay, Luzon," by Guillermo J. Blanco; "Socio-Economic Problems Affecting the Production, Processing and Distribution of Fisheries Products," by Jose C. de la Cruz; and "Research Activities on Marine Fisheries Biology in 1957," by Klaus Tiews.

PORtUGUESE MAN-OF-WAR:

"Fishers of the High Seas," by Charles E. Lane, article, *Ciba Journal*, no. 19, Autumn 1961, pp. 32-35, illus., printed. *Ciba Journal*, Ciba Limited, Basle, Switzerland. Compares the structure of the Portuguese man-of-war (*Physalia physalis*) with a modern whaling operation. This brightly colored invertebrate has many long, inconspicuous tentacles dependent from its lower side. These tentacles are covered with stinging cells with which the prey is paralyzed, after which it is entangled and killed, then conveyed to the digestive organisms of the animal. Concludes the author "thus we see that the

most elaborate, sophisticated techniques invented by man for the capture of elusive marine mammals were antedated by millions of years by methods and equipment which the most primitive multicellular animals evolved under the irresistible drive of natural selection and adaptive survival."

SALMON:

Annual Fish Passage Report, North Pacific Division, Bonneville, The Dalles and McNary Dams, Columbia River, Oregon and Washington, 1960, 64 pp., illus., processed. U. S. Army Engineer District, Portland, Oreg., 1961.

On the Artificial Raising of the Level of Water on the Spawning Grounds of Far-Eastern Salmon, by I. S. Vasilev, Translation Series No. 351, 2 pp., processed. (Translated from the Russian, *Rybnoe Khoziaistvo*, No. 7, 1957, pp. 70-71.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, July 1961.

The Functional Importance of the Pre-Spawning Changes in the Skin of Salmon (as Exemplified by the Genus *ONCORHYNCHUS*), by A. I. Smirnov, Translation Series No. 348, 14 pp., processed. (Translated from the Russian, *Zoologicheskii Zhurnal Akademii Nauk SSSR*, vol. 38, no. 5, 1959, pp. 734-744.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

Local Stocks of Pink Salmon in the Amur Basin and Neighbouring Waters, by R. I. Eniutina, 8 pp., illus., processed. (Translated from the Russian, *Voprosy Ikhtiolozii*, no. 2, 1954, pp. 139-143.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

Spawning Grounds of Sockeye Salmon (*ONCORHYNCHUS NERKA* Walb.)--A Review of Their Geomorphology, Temperature Conditions and Hydrochemistry, by E. M. Krokhin, Translation Series No. 344, 31 pp., illus., processed. (Translated from the Russian, *Voprosy Ikhtiolozii*, No. 16, 1960, pp. 89-110.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

SEAWEEDS:

"Seaweed Technology," by E. Booth, article, *Nature*, vol. 193, no. 4813, January 27, 1962, pp. 331-332, printed. *Nature*, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y. The fourth International Seaweed Symposium was held at Biarritz, during September 18-25, 1961, and was attended by more than 220 scientists and industrialists from thirty-four countries. The various interests in algalogy, algal chemistry, and seaweed utilization were all evident at this Symposium, but in contrast with previous symposia, the botanical section was unusually well represented. In fact, almost two-thirds of the papers presented were on taxonomy and the culture of algae or their distribution, while the other papers were almost equally divided between pure chemistry and the various facets of the industrial utilization of seaweeds.

SHRIMP:

"Forsoksfiske etter Reker pa Helglandsysten" (Experimental Fishing for Shrimp on the Helgeland Coast), by Odd Selvag, article, *Fiskets Gang*, vol. 47,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

no. 3, January 19, 1961, pp. 56-58, illus., printed in Norwegian. *Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.*

"Over 43 Years of Co-Operative Shrimping," article; *World Fishing*, vol. 11, no. 2, February 1962, pp. 35-36, illus., printed, single copy 3s. (about 42 U.S. cents). *World Fishing*, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. Discusses the operations of a Morecambe, England, shrimp-fishing cooperative and its use in recent years of a German shrimp-peeling machine, which can perform the work of 10 women.

SMALL BUSINESS MANAGEMENT:

Finding New Products for Small Manufacturers, by James F. Maher and Dean C. Coddington, Management Research Summary, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1962. A summary of a report, titled "New Product Development--Reducing the Risk." The conditions essential to successful new-product development include: (1) surplus management capacity, (2) awareness of the firm's sales potential, (3) good financial condition, (4) budgeting of time and money to be used for new-product development, (5) a clear definition of the areas of interest, and (6) a creative atmosphere.

Reducing Management Waste, by Harvey C. Krentzman, Management Aid for Small Manufacturers No. 136, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1962. Reducing management waste can be achieved by: (1) being aware of why the business exists, (2) organizing and delegating responsibilities and authorities to accomplish the company's goals, (3) keeping the company in touch with the future, (4) establishing daily, weekly, or monthly goals for the top supervisors, (5) keeping top supervisors informed on company goals and progress, (6) guiding top supervisors around the pitfalls of management waste, and (7) evaluating periodically the daily procedures and systems used to avoid management waste.

Retirement Plans for Small Business, by Morton R. Gould, Management Aids for Small Manufacturers No. 135, 4 pp., processed. Small Business Administration, Washington 25, D. C., December 1961. A leaflet on retirement plans for small business. In summary, the author states that "Small businessmen are finding a growing interest in retirement plans. This interest is growing because the United States population is living longer, because of business competition, and because of the personal and business advantages to be gained through the use of such plans." The leaflet discusses the types of plans that can be used, pointing out the general advantages of each.

Small Suppliers and Large Buyers in American Industry, by Samuel Paul, Sidney C. Sufrin, and Marion A. Buck, Management Research Summary, 4 pp., processed. Small Business Administration, Washington 25, D. C., October 1961. A summary of a report, titled "Business Relations Between Small Suppliers and Large Buyers." Steady flow of business, assurance of payment without friction, size of order, and prestige value are the most benefi-

cial aspects of doing business with large buyers, according to the small suppliers who took part in the study. Suggested changes included improvement in bureaucratic practices, better timing of orders and delivery improvements, in technical relations, and consideration for small suppliers' problems.

Specialized Help for Small Business, by David R. Mayne, Small Marketers Aid No. 74, 4 pp., processed. Small Business Administration, Washington 25, D. C., December 1961. Small businessmen in increasing numbers are finding that outside assistance can be of real dollars-and-cents benefit in solving certain management problems. They are using such experts to help analyze and solve various management, operating, and technical problems. This leaflet discusses when and when not to use consultants. It highlights some specific financial savings small companies have made as the result of outside help, advice, and guidance.

Using a Combination Export Management Firm, by Richard G. Lurie, Management Aids for Small Manufacturers No. 137, 4 pp., processed. Small Business Administration, Washington 25, D. C., March 1962. Discusses the services which combination export management (CEM) firms offer manufacturers. Gives suggestions on the advantages of those services and how to select and locate a CEM firm that is best-suited for a particular company. In summary, the author states that "Small businessmen sometimes feel that they could sell abroad, but don't enter export markets because they aren't familiar with overseas selling. Or, in other cases, they cannot afford to set up an export department to handle the specialized details of foreign trade. Many of these men are solving these problems by using a combination export management firm."

SOUTH AFRICA:

"Tunneys and Marlins of South Africa," by F. H. Talbot and M. J. Penrith, article, *Nature*, vol. 193, no. 4815, February 10, 1962, pp. 558-559, illus., printed. *Nature*, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

SOUTH PACIFIC:

"Better Barramundi Catches for Papuan Fishermen," by A. M. Rapson, article, *South Pacific Bulletin*, vol. 12, no. 1, January 1962, pp. 46-47, illus., printed, single copy 30 cents. South Pacific Commission, G.P.O. Box 5254, Sydney, Australia. Barramundi, or giant perch, is an excellent eating fish often found in abundance in Papuan waters. This article briefly reviews the extensive experiments being carried out with mesh nets and fish traps to improve barramundi catches by Papuan fishermen.

"Fisheries Development in the Cook Islands," by Ronald Powell, article, *South Pacific Bulletin*, vol. 12, no. 1, January 1962, pp. 50-53, 60-61, illus., printed, single copy 30 cents. South Pacific Commission, G.P.O. Box 5254, Sydney, Australia.

"Islanders Learn Modern Fishing Methods at SPC-FAO Centre," by Pierre Lusyne and Louis Devambez, article, *South Pacific Bulletin*, vol. 12, no. 1, January 1962, pp. 24-26, illus., printed, single copy 30 cents. South Pacific Commission, G.P.O. Box 5254,

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Sydney, Australia. A subregional Fisheries Training Center for Pacific islanders from Melanesian territories was held under the auspices of the South Pacific Commission and the Food and Agriculture Organization from August 23 to November 6, 1961, at Tulagi, British Solomon Islands. The twofold purpose was to train fishermen in the construction and operation of improved fishing gear, and in the operation of mechanized fishing craft.

SPAIN:

"La Conserva Espanola en los Mercados Europeos" (Spanish Canned Products in European Markets), by Alevin, article, Industria Conservera, vol. 27, no. 270, December 1961, p. 309, printed in Spanish. Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain.

"La Industria de Conservas de Pescado en Galicia y su Proyección Exportadora" (The Canned Fish Industry in Galicia and Its Export Possibilities), article, Industria Conservera, vol. 27, no. 270, December 1961, pp. 310-312, printed in Spanish. Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain.

TRADE LISTS:

The Bureau of International Business Operations, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1 a copy.

Boat and Ship Builders, Repairers and Chandlers--India, 17 pp. (December 1961). Lists the names, addresses, and size of boat builders, and types of vessels (including fishing craft) built by each firm.

Boat and Ship Builders, Repairers and Chandlers--The Netherlands, 27 pp. (December 1961). Lists the names, addresses, and size of boat builders, and types of vessels (including fishing craft) built by each firm.

Canneries and Frozen Foods--Producers and Exporters--Austria, 11 pp. (January 1962). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes producers and exporters of canned fish and anchovy paste.

Canneries and Frozen Foods--Producers and Exporters--Chile, 7 pp. (January 1962). Of the approximately 70 food canners in Chile, 27 can fish and shellfish. Sardines, tuna, bonito, and salmon-like fish are the principal canned fish products. A wide range of shellfish is processed, including black and white mussels, crabs, sea urchins, shrimp, clams, and limpets. In 1959 exports of canned shellfish to the United States amounted to approximately \$120,000 and to Great Britain \$43,000. Lists the names and addresses, size of firms, and types of products handled by each firm.

Fishing Industry Plant and Equipment--Importers, Dealers, and Manufacturers--Republic of South Africa, 20 pp. (January 1962). Lists the importers,

dealers, and manufacturers of fishing industry plant and equipment, size of firms, and type of equipment handled by each firm. Imported equipment for the fishing fleet and fish-processing plants consists of marine and industrial Diesel engines, fishnets, pumps, floats, generators, radio telephones, radar, echo-sounders, engineroom fittings, life-saving equipment and protective clothing, weighing machines for wet fish and for fish meal, can seamers and syrupers, can labelers, carton packers, fork-lift equipment, stainless steel tubing, twin screw fish-meal presses, centrifugal oil separators, process-control instruments, and outboard motors.

TRAWLERS:

"Une Nouvelle Serie de Chalutiers Polonais de 61 m" (A New Series of Polish Trawlers of 61 Meters), article, La Peche Maritime, No. 1007, February 1962, pp. 97-99, illus., printed in French. La Peche Maritime, 190 Boulevard Haussmann, Paris, France.

TRAWLING:

""La Peche par L'Arriere" (Stern Trawling), article, La Peche Maritime, No. 1007, February 1962, pp. 93-96, illus., printed in French. La Peche Maritime, 190 Boulevard Haussmann, Paris, France.

TUNA:

Age Determination of the Pacific Albacore of the California Coast, by Robert R. Bell, 11 pp., illus., printed. (Reprinted from California Fish and Game, vol. 48, no. 1, January 1962, pp. 39-48.) Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif.

UNITED KINGDOM:

"Les Problemes de la Peche Britannique" (British Fishery Problems), article, La Peche Maritime, vol. 41, no. 1006, January 1962, pp. 54-58, illus., printed in French, single copy 17 NF (about US\$3.50). La Peche Maritime, 190 Boulevard Haussmann, Paris, France.

VOLGA DELTA:

Availability of Sticklebacks as Food for the Predacious Fishes of the Volga Delta, by K. P. Fortunatova, Translation Series No. 331, 19 pp., illus., processed. (Translated from the Russian, Zoologicheskii Zhurnal, vol. 38, no. 11, 1959, pp. 1689-1701.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

WORLD TRADE:

The following printed World Trade Information Service Reports, published by the Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Establishing a Business in Sudan, Economic Report No. 62-1, WTIS Part 1, 8 pp., illus., 15 cents, January 1962.

Import Tariff System of Libya, Operations Report No. 62-1, WTIS Part 2, 2 pp., 10 cents, January 1962.



TRUE FISH STORY ON TEMPORARY SHORTAGE OF MAINE SARDINES



Why Are Maine Sardines In Such Short Supply?

Because of a critical scarcity of fish, in areas where they could be harvested, the industry was able to produce only 675,000 cases during the entire 1961 season vs. an average of 2,250,000 cases for the previous 20 years. Virtually every cannery was affected and this was the only truly major shortage to hit the industry since 1938.

What Were The Reasons For The Scarcity Of Fish?

The best answer appears to be a temporary, and not unusual, change in the ocean currents in the Gulf of Maine. Scientists can see no biological connections and are writing it off as a quirk of nature. There were thousands of acres of fish offshore but there was seldom the right combination of wind, tide and temperatures to bring them in where they could be taken.

Why Is The Supply Situation Of A Temporary Nature?

The odds are with 90 years of history which has never seen two really poor fish years in a row. Scientists and others have not been able to find any evidence of why the fish will not be back in their old haunts in 1962. As an example consider the 659,000 case pack in 1938 which was followed by a whopping 2,171,000 cases in 1939. The industry is betting on it.

When Can You Expect Adequate Supplies To Again Be Available?

In order to help alleviate the shortage the State of Maine has authorized winter and early spring packing and this should help some. However normal major production should start in late May with Maine sardines rolling out of the factories to the trade in hundreds of carloads by mid-June. We hope you will reserve plenty of shelf space for stocking this high profit item again.

**THE MAINE CANNERS LOOK FOR ANOTHER
BANNER PRODUCTION SEASON IN 1962 AND HOPE THAT
THE TRADE WILL BEAR WITH THEM DURING THIS
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